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and Building Age

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PUBLISHER'S PAGE

The New Deal and the Building Industry

THE only reason why the United States is not highly prosperous—why the nation's income this year will be only about 65 billion dollars instead of 100 billion or more, and why, consequently, building has not fully revived—is that for years we have been following more and more unsound and ruinous economic policies. We were following some of these before the New Deal—as shown by the fact that the Great Depression came ahead of the New Deal. But the New Deal, instead of correcting previous unsound policies, has simply increased their number and virulence—thereby protracting to the present a depression which otherwise would have ended three or four years ago.

These facts have a direct and important bearing on attacks on the building industry being made and threatened by New Dealers, especially Thurman Arnold, official trust-buster of the New Deal.

Their principal charge is that revival of home building is being hindered by extensive monopoly practices which make costs of building excessive. Granting, for the sake of argument, that the charge is true—will those making it kindly tell us what has prevented revival of some other important industries and of *business as a whole*?

RAILROAD freight loadings are the best single measure of the total business done in the country; and in the first half of 1939 they were 60 per cent as large as in the first half of 1929. Contracts for residential construction were 61 per cent as large—showing that, as compared with 1929, the volume of home building actually was relatively larger than the volume of total business. Why, then, so much noise about lack of home building? Why not, instead, investigation of why, after six years of New Dealing, *business as a whole* is still so much smaller than ten years ago—and why it is so much worse in some other industries than in home building?

For example, speaking of the railroads: Between the first halves of 1937 and 1939 residential construction increased 173 mil-

lion dollars, while railroad buying of equipment and materials decreased 240 million dollars—although the railroads greatly needed to increase their buying. In consequence, while in the first half of 1939 residential construction was 61 per cent as large as in the first half of 1929, railroad buying from manufacturers was only 40 per cent as large. The government for years, and under the New Deal, has interfered with the railroads more than with any other industry—and, significantly enough, the railroads have suffered the most ruinous destruction of their earning and buying power of any industry, and consequently are the worst single drag on recovery.

WHY does the government attack building or any other industry whose condition is now as good as *the average of all business*, instead of doing something constructive to stimulate industries whose condition is *below the average*—especially if the latter's condition is obviously due principally to its own interference.

The *American Builder* is not unsympathetic with the government's attacks on monopoly practices in the building industry. This paper believes that banishment from industry of every form of monopoly practice of either business or labor would contribute greatly to the restoration of prosperity. But this paper is certain that all the bad practices, monopoly or otherwise, within the building industry are far less responsible for its failure fully to recover than the numerous unsound policies of the New Deal which for six years have prevented recovery of *business as a whole*.

And this paper cannot feel confidence either in the anti-monopoly zeal or the building industry policies of an administration that has done more to *promote monopolies* and to *prevent prosperity* in most industries than all preceding administrations combined.

Samuel O. Dunn,

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"**B**BETTER cement makes better concrete," as the saying goes—and here is a typical example: Completion of Missouri Pacific tunnel, Gray Summit, Mo., built in 1929, determined date when new double-track cut-off, St. Louis to Jefferson City, could be placed in service.

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AMERICAN BUILDER

AND BUILDING AGE

Building Industry Wants the Truth

ASSISTANT U. S. Attorney General Thurman Arnold's highly publicized investigation and proposed anti-trust law prosecutions against restraints of trade in the building industry may do a great deal of good. On the other hand, they may do much harm if the net result is to overemphasize the defects of the industry without doing anything really effective to correct them.

Residential building has been forging ahead at a reasonably good pace, and it would be most unfortunate if the present barrage of charges, criticisms and threatened suits merely served to scare off prospective customers. *American Builder* does not believe this will be the case; the residential construction industry is so large, so diversified and its operations scattered over such wide areas of the nation that even such serious charges as these can have little effect on the industry as a whole. At the same time, Mr. Arnold's anti-trust actions, if honestly and intelligently carried out against all kinds of restraints, including labor racketeering and politically controlled building codes, may well accomplish a definite good in communities where such conditions exist. It should be noted, however, that half a dozen cities do not constitute the residential building market or, indeed, even a considerable part of it; and the worst restraints—or just plain rackets—that exist in the construction industry apply more to large operations rather than to the individually small operations in the home building field.

American Builder, in common with the rank and file of the residential construction industry, wants more home building. This publication believes in a system of free enterprise in this field as well as in other American industries; and where such monopolies, restraints or rackets as Arnold described in his testimony before the Temporary National Economic Committee exist, they should be eliminated. The principal fear of most honest-thinking building men is that the anti-trust actions will attack a few isolated industrial aspects, and then, due to political considerations, fail to carry through in regard to labor and building codes.

Best Defense Is Knowledge

The present barrage of criticism of the building industry, including the spectacular accusations of John T. Flynn in a recent issue of *Collier's*, calls for a defense. It is easy to understand why the average citizen, stimulated by such articles, is irritated by what is described as the industry's "inefficiency," "high cost" and lack of that smooth-working surface appearance presented by such an integrated industry as that making automobiles. The

common sense of the average individual, however, will soon reassert itself when it is pointed out that residential construction by its very nature cannot operate like automobile building. It would be far more accurate, if comparisons must be made, to compare it to such an industry as agriculture. The same charges of inefficiency are leveled at the average small farmer, and there may be considerable truth in many of the charges. Yet no one seriously believes that all farm production can be concentrated in half a dozen large and therefore supposedly "efficient" producers.

Perverse Conspiracy?

The most frequently voiced complaint throughout the Monopoly Committee hearings was that the residential building industry fails to produce enough homes at prices within reach of the lowest income group. Many of the well-meaning "experts" who testified seemed to think there was some perverse conspiracy on the part of building men that keeps them from even attempting to build houses for people earning less than \$2,000 a year. Yet it is common knowledge of the industry that there are thousands of enterprising, keen-minded, close-buying men in the building field, constantly trying to tap the so-called low-price mass market. In fact it is the constant effort to produce a lower priced house that accounts for the sharp buying, chiseling and cost-cutting practices verging on the unscrupulous that are so frequently criticized. There is as much brain work and efficiency in the building industry as any other—but the conditions of operation are far different.

Even such a highly praised "streamlined" industry as automobile manufacturing does not produce new products for the low income group. A \$600 or \$700 automobile is certainly a luxury that cannot be afforded by the lowest income group, any more than a \$5,000 house. What happens is, of course, that the low-income individual uses a second, third or fourth-hand automobile just as he uses second-hand furniture, clothes and other necessities. But apparently the building industry is expected to provide him with a brand new, fully equipped house with all the latest gadgets. And the implication is that if private building does not do it the government must and will.

16,600 Communities in 3,300 Counties

Everyone in the building industry would like to have lower costs that would permit greater volume. It is possible that the present period of criticism, investigation and re-examination of well-established ideas and methods

may bring about a general lowering in building costs. But injustice should not be done to those who are delivering a good product or service at a reasonable price.

By far the majority of producers, distributors, dealers, contractors, and building mechanics are delivering good and equitable value. Many of the costs involved in home construction that may appear high are due to the nature of the industry and its operation rather than to any "collusive" action. While a few large producers of raw materials are highly integrated at the top, the vast part of the building industry is, by its very nature in operating on building sites scattered over more than 16,600 communities in upward of 3,300 counties, highly disorganized and unintegrated. There is probably less actual monopoly in the residential building industry for the nation as a whole than in any other industry.

It is frequently said that building industry distribution costs are high, but careful studies show that they are no higher than for other similar commodities, and in view of the vast number of retail outlets required to service building sites in thousands of scattered communities, they are not unreasonable. Because of the cyclical nature of the industry, manufacturing plants must maintain a large productive capacity over long periods of idleness, and operation costs and profits must be considered over the period of a building cycle rather than in the light of any one year.

The most astute observation that came out of the entire hearings of the Temporary National Economic Committee was that of Dr. Theodore Kreps to the effect that the problem of housing is just one part of the great unsolved problems of our modern economy, and that basically what is needed is industrial and farm prosperity *that will lift incomes to permit more people to buy homes.* Active building industry men are not willing to let the matter rest there; they will continue to strive to produce a better house at a lower price so that they can increase their volume of business. If the Arnold investigation will help them attain that end, they will welcome it.

Are "Restraints" Holding Back YOUR Business?

Let's hear about them. Or do you have suggestions as to the best way to answer widespread criticism of your industry? *American Builder* will welcome constructive letters from readers on these subjects.—The Editors

BUILDING UNIONS IN THE LIMELIGHT

THE building trades unions have been coming in lately for more public attention than they might wish, although the publicity they have been getting is entirely the result of their own actions. In striking against the "security wage" of WPA, as they have done in a number of cities, they have focused upon themselves a

public criticism that no one else could create. The injustice of paying a union WPA worker double the amount paid other workers—when at best the funds are scarce to create jobs for the unemployed—became immediately apparent to the public. The strike of union building workers against WPA has served to advertise the kind of selfish, arbitrary and short-sighted attitude of some union officials that "as long as we get ours," the rest of the job, or the industry or the country can go hang. They would stop all WPA work rather than have their members accept a security wage which should rightly and justly apply to all.

In New York recently, building union workers who indulged in the most arbitrary and high-handed demands merely because they were in a position to enforce them on World's Fair participants, came in for a well deserved censure. Such practices as the electrical workers refusing to install nonunion products and insisting on the rewiring of complicated apparatus done by far better qualified experts in factories deserved to be shown up.

In the period of industrial and labor change through which this country is going, the biggest problem is to determine where self-interest must end because of its clash with the best interest of the whole job, or the industry or the nation. Such building union practices as limitation of output and refusal to use new products or processes, and other practices that reduce efficiency and raise costs, cannot be permitted to creep any further into construction. Fortunately, thus far they have had little effect on residential building, and in their own self-interests, labor leaders should realize that there is no place for them.

* * *

BUILDING BUZZ

by Edgar Allen, Jr.



"I want my house to be different—
could you put the cellar in the attic?"

Building Industry's Ills Aired

But "Monopoly Committee" Witnesses Fail to Agree on Cure

By JOSEPH B. MASON

HEARINGS of the Temporary National Economic Committee on the building industry were brought to a close July 14 with a summary by Dr. T. J. Kreps, economic consultant to the T. N. E. C., in which he described the housing problem as largely local and requiring the co-ordinated action of local government and private enterprise. "Basically," he said, "the problem of adequate housing is that of securing industrial and farm prosperity, of lifting consumer income to the level of the prices of building materials and housing costs."

This was perhaps a fitting note on which to close a series of public hearings on the building industry which have been notable from the start for the contradictory views expressed and for the complete failure of any two witnesses to agree either as to the problems under dis-

cussion or the solutions offered by some of these persons.

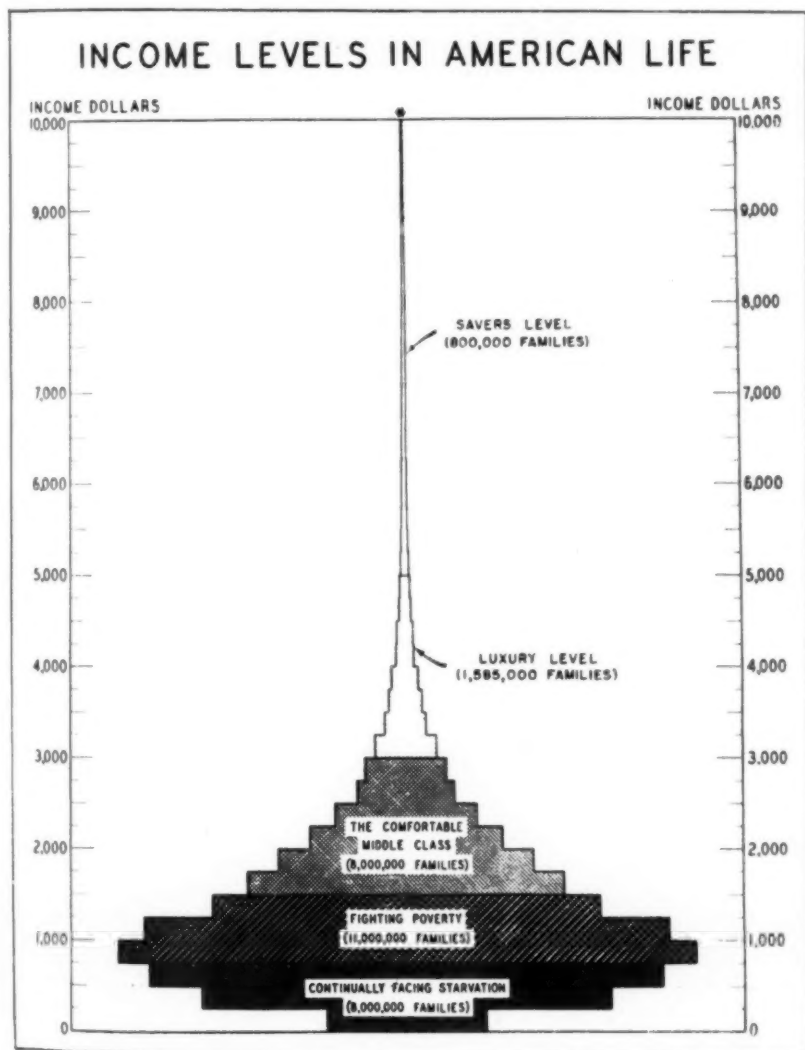
The closing summation of Dr. Kreps that the solution of building industry problems is a local matter was a somewhat different point of view from that expressed by Thurman Arnold, Assistant U. S. Attorney General, who in his testimony before the Committee announced that the Department of Justice is preparing for nationwide and simultaneous anti-trust law prosecution against restraints of trade in the building industry.

Opened June 27

Hearings before the Temporary National Economic Committee, made up of senators, congressmen and members of government departments, were opened June 27

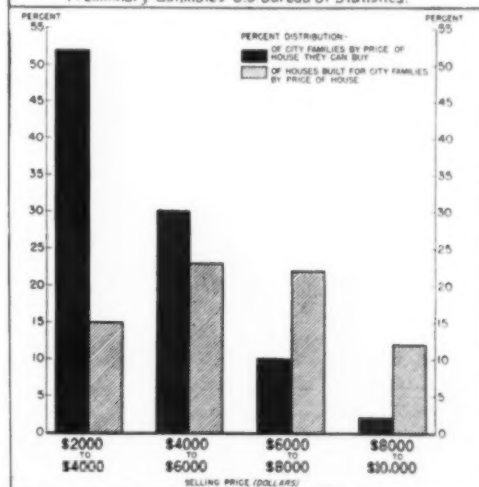
with a statement by Joseph J. O'Connell, who acted as special counsel, that the purpose would be to determine "obstacles which at the present time play a part in preventing expansion in the construction industry." Senator Joseph C. O'Mahoney is chairman of the Committee.

While the hearings started off bravely with a considerable fanfare of publicity, the feeling of building industry observers is that they failed to bring out—with the exception of the testimony of Thurman Arnold—much of importance concerning labor abuses, building codes restrictions or collusion in building material prices. This may be explained on the grounds that the



DR. THEODORE KREPS introduced the above chart on family incomes. He said that 183,000 families with incomes over \$10,000 get as large a share of the total U. S. income as nearly 11 million families at the bottom. To include the largest incomes in the above chart (at a vertical scale of one inch per \$1,000) it would have to be extended 350 feet higher at the top where it is starred, he testified.

HOUSES CITY FAMILIES CAN AFFORD AND HOUSES BUILT-1938
Preliminary Estimates-U.S. Bureau of Statistics.



ISADOR LUBIN used the above chart to show that not enough houses are being built for low-income families, while too many houses are being built for upper income groups. Families who can afford houses costing \$2,000 to \$4,000 constituted 52 per cent of the market. Yet in 1938 only 15 per cent of houses built were in that particular range.

Department of Justice did not wish to tip off its hand in regard to forthcoming anti-trust suits. It may also be explained by the reluctance of the Committee to antagonize "labor." Among the witnesses who testified was Nathan Straus, administrator of the U. S. Housing Authority, who should have been in a good position to observe restraints of trade of various kinds in the building industry. He gave labor a complete whitewash, saying, "The building trades labor have co-operated understandingly."

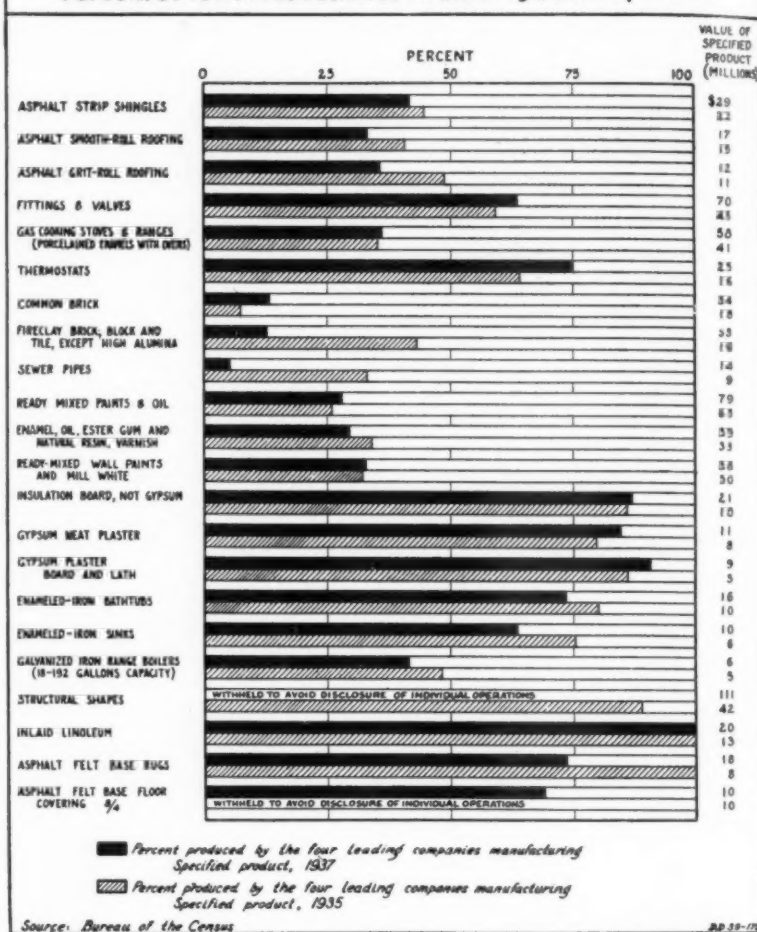
Whatever its deficiencies in getting at the real problems of the industry, the Committee hearings did bring forth an abundance of statistical data, theories by economists and widely conflicting ideas of experts as to how building costs could be reduced. Highlights of the testimony of witnesses follow:

DR. ISADOR LUBIN, Commissioner of Labor Statistics, presented a statistical picture of the need for housing, saying that there is a need for 525,000 new units a year for the next ten years. He said that the construction industry fails to suit its product to the market, building houses primarily for the small group with incomes of \$2,000 or over rather than the lower-income group. He presented a chart which purported to show that while more than half the urban families in the country can afford to live in houses selling from \$2,000 to \$4,000, in 1938 only 15 per

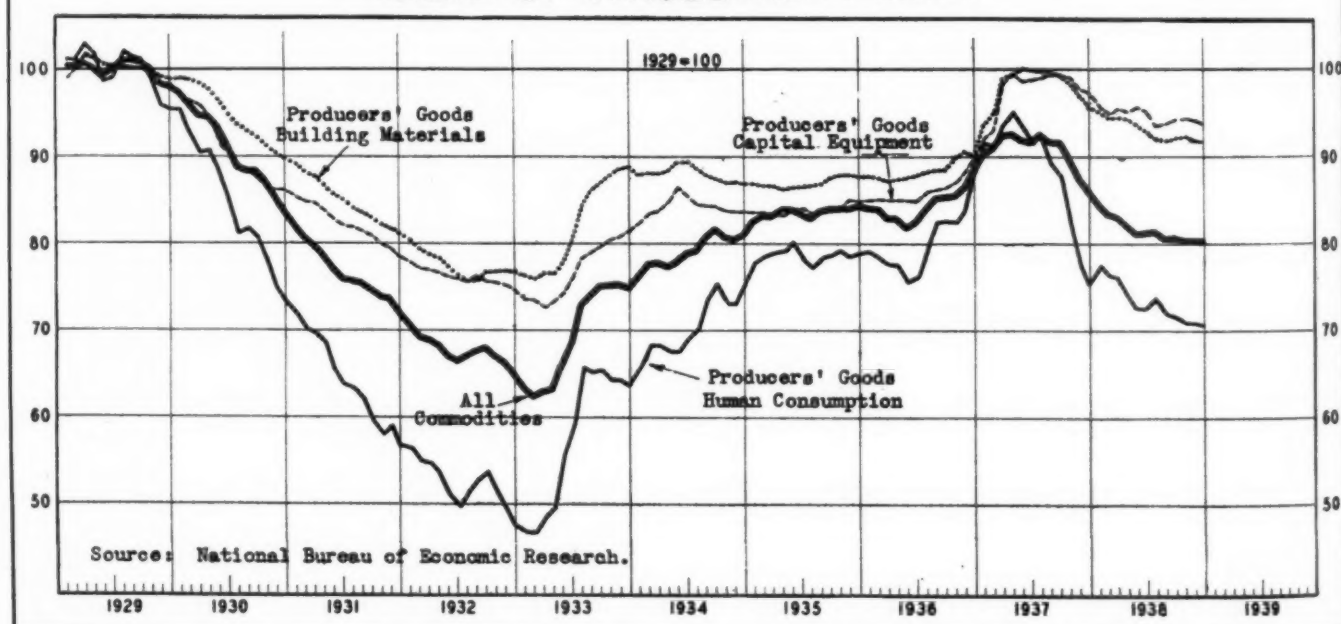
THE PART PLAYED by the four largest construction material producers in selected lines is shown in chart at right introduced by Dr. Willard Thorp, based on census data. The "big four" in some lines control from 40 to 90 per cent of their industry, he said.

THE "BIG FOUR" IN SELECTED PRODUCTS

Percent of Total Production Controlled by Four Top Firms



TREND OF WHOLESALE PRICES



WHOLESALE PRICES of building materials and capital equipment have remained higher than goods for human consumption, pointed out Dr. Kreps in commenting on the above chart prepared by the National Bureau of Economic Research. The high cost of building materials in terms of other goods and services causes less use, he said.

cent of the houses built were in that range. His chart shows that too many houses were being built in price classifications above \$6,000.

ROBERT DAVISON, the next witness, director of housing research for the Pierce Foundation, also criticized the building industry for not producing more houses for the lower income group, saying that "it is not only a question of technique but of psychology." He presented figures showing that the carrying costs of a home would be greatly reduced by a reduction in interest and amortization charges. He pointed out that a 20 per cent reduction in material costs would reduce monthly fixed charges only 9.33 per cent, and a 20 per cent reduction in labor costs would reduce monthly fixed charges only 4.67 per cent. But a 20 per cent reduction in interest and amorti-

zation costs, he figured, would reduce monthly fixed charges 16.69 per cent.

SMITH AND DAWSON, Chicago contractors, were the next witnesses. They gave a breakdown of the cost of their typical \$4,800 house, showing a profit of \$350 on the house and \$350 on the lot. Workmen's compensation, state unemployment tax and social security expense amounted to \$80. They told the Committee of trade restraints which force costs up, saying that the Material Merchants' Association in Cook County was so strongly organized that "you had to buy from their yards." They also described plumbing restrictions which make it difficult to buy direct from the manufacturer. They also stated that they were not allowed to buy windows with glass in due to a restriction of the Glaziers' Union.

Interest Rates Discussed

Several witnesses were then called representing financial institutions, who testified concerning their view of reasons for objecting to any general further lowering of interest rates.

R. R. ROGERS, vice president of the Prudential Life Insurance Company, estimated the three elements of interest costs as (1) Cost of money, 3.85 per cent; (2) Risk, 0.48 per cent; and (3) Cost of doing business, 0.5 per cent. Under questioning, however, he revealed that the mortgage portfolio of his firm paid the highest return of any group of securities, ranking next to policy loans.

MORTON W. BODFISH, executive vice president of the U. S. Building and Loan League, next testified that the government has "put a floor" on rates to the type of savers and investors who supply the funds to savings and loan associations, namely, the U. S. Savings Bond which pays a long-term rate of 2.9 per cent. He fixed the cost of doing business at 1½ to 2 per cent of the assets. He indicated that one-half of 1 per cent per annum must be set aside for reserves against such conditions as real estate cycles, industrial failures, community depreciation, and other factors over which the loaning institution has no control. He criticized the "continual agitation about public housing" as a deterrent to home building. "A working man is not going to buy a new cottage and pay \$25 a month on the purchase of it for 10 or 20 years if he thinks he can get into a government apartment providing twice as expensive accommodations and rent it at \$20 a month," he said. He pointed out that home ownership is most prevalent in cities of 25,000 or less, stating that in 1938 166,000 out of 262,000 single family units built were constructed in such cities. Further evidence of the financing of small homes in small cities was given by the fact that the 3,800 members of the Federal Home Loan Bank system made 365,000 loans in 1938, the average size of which was \$2,200. More than half were in towns of less than 25,000. Bodfish declared, "National figures unwittingly distort what is being done in home building and home ownership of small homes in the smaller communities."

Arnold Announces Anti-Trust Program

THURMAN ARNOLD, Assistant U. S. Attorney General in charge of anti-trust law enforcement, provided the high point of the Committee hearings when he described restraints of trade in the building industry that are to be the subject of anti-trust law prosecution of industry-wide scope in the near future. He declared:

"Unreasonable restraints of trade, nearly all of which are probable violations of the law, are, in my opinion, the most conspicuous reasons for high construction costs. They appear, today, at every level of the building industry.

(Continued to page 96)

Material Prices—1929, 1936 and 1937

Building Material	Price Index (1926-100)			Per- cent change 1929- 37
	June, 1929	June, 1936	June, 1937	
Douglas fir boards, 1 inch by 8 inches	113.7		134.3	18
Douglas fir drop siding	102.1		105.1	3
Douglas fir plaster lath	84.1	97.0	97.0	15
White pine window sash	100.0	93.7	128.7	29
Western pine window frames	98.5	84.8	103.0	5
White pine standard doors	101.6	94.1	121.4	19
White pine door frames	98.7	83.7	106.2	8
Yellow pine flooring	82.1	80.7	96.5	18
Red cedar shingles	114.2	114.8	124.9	9
Prepared roofing, individual shingles	76.2	85.3	103.0	35
Prepared roofing, strip shingles	76.2	85.3	103.6	36
Plaster, per ton	62.5	125.0	125.0	100
Cement	94.6	95.6	95.6	1
Common building brick	66.8	63.2	91.3	37
Light colored front brick	84.9	82.9	94.4	11
Building sand	90.6	98.2	102.2	13
Structural steel	99.6	92.4	114.9	15
Asbestos pipe covering	92.0	92.0	108.0	17
8-penny wire nails	100.0	80.0	103.6	4
Cast iron 6-inch soil pipe	69.3	88.0	103.2	49
Galvanized sheets	91.9	71.0	96.2	5
Rough barn white pine No. 2	99.9	81.9	93.4	-6
Plain white oak No. 11	87.9	68.2	83.0	-6
Insulation building board	82.8	75.9	75.9	-8
Mason's lump lime	87.4	79.2	78.5	-10
Builder's varnish	100.0	95.3	95.3	-5
House paint, all shades	100.0	92.3	92.3	-8
Inside flat wall paints, all shades	85.0	78.0	76.5	-10
Hollow building tile	97.1	89.9	89.9	-7
Linoleum	107.4	90.6	95.1	-11
Window glass, American Grade A	107.7	76.7	69.7	-35
Black steel pipe, ¾ inch	100.0	83.3	96.2	-4
Galvanized steel pipe	100.0	82.0	94.0	-6
Radiation by steam or water	118.1	93.1	99.8	-16
Heating boilers	97.0	77.0	87.8	-9
Bathtubs, enameled	79.0	66.7	66.7	-16
Water closets	111.5	63.1	63.1	-43
Sinks, ordinary kitchen	80.3	55.7	55.7	-31
Common mortise locks	120.3	66.2	84.2	-30
Knobs, steel, bronze plated	114.3	57.1	74.3	-35

WHOLESALE PRICES of building products in 1929, '36 and '37 are shown in the above table introduced into the T. N. E. C. record. About half the items listed were higher than 1929, half lower. The greatest price increase was in plaster, the greatest price decrease, water closets. The data came from Bureau of Labor Statistics.

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Developers of

NORTHWOOD PARK, MARYLAND



108 CLARK STREET

Have You Seen "THE BRIDE'S HOME"?

Over a thousand people inspected this unusual home last week—with pleasure. For here is a home that is distinctly different—complete in every detail—ready for a pair of happy newlyweds to move into and begin housekeeping. Furniture, rugs and draperies have been tastefully selected—the kitchen is stocked with groceries—and a new Ford V-8 is in the garage. Truly, it is the home a modern bride would select. Of individual Cape Cod Colonial design, the home contains a large, center entrance hall, living room with log-burning fireplace and built-in bookcases, a beautiful dining room and an ultra modern kitchen that is completely equipped. The two large bedrooms have closets of generous size—the bath is a masterpiece in gleaming tile. The home is fully weatherstripped, insulated and screened. Venetian blinds, full waterproofed basement with oil burner and ample space for recreation room. Vermont slate roof.

CO-OPERATING IN THE BRIDE'S HOME ARE

BRYANT AIR CONDITIONING
UTICA RADIATOR CO.
THOMAS SOMMERVILLE
OXFORD CABINET CO.
FETTERMAN BLDG. SUPPLY CO.
O. R. EVANS & BROS., INC.
E. C. KEYS & SONS
COLESVILLE NURSERY

JAMES WILSON, President
THOMAS E. CLARK, Vice President
WM. WALTER SMITH, Treasurer

\$10,867.54

Includes

... The Complete Home, with Furnishings, Drapes, Rugs, Groceries and a New 1938 Ford Tudor V-8.

Furnished by Mary Annette Chittick and Mary Smith of The Hecht Co.

Other Northwood Park homes open for your inspection today are priced from \$6,750 to \$9,750

Follow Colesville Pike from Silver Spring to Clark Street entrance to Northwood Park—about 1/2 mile beyond the Indian Spring Golf Club.

OPEN DAILY

"The Woodland Community"

TELEPHONE SHEPHERD 4046 or 4330

44

BRIDE'S HOME PROMOTION IDEAS

Exhibit Home Dedicated "to the Modern Bride"

Ford V-8 Included in Purchase Price

Complete Furnishings, Draperies and Silver Included in Price

Kitchen Stocked with Groceries and Supplies

Price Quoted in Dollars and Cents — \$10,867.54

Extensive Advertising and Publicity Created through Co-operation with Department Stores, Food Companies, Building Manufacturers, Ford Dealer and Local Business Interests.

AMERICAN BUILDER
The Costly FIGURES
FOR THIS HOUSE
ON PAGE

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Sales-Getting Advertisement

ADVERTISEMENT at left is one of a series published by developers of Northwood Park in local newspapers explaining the unusual features of the "Bride's Home." Note the odd figure in dollars and cents stated for the purchase price. Advertising brought out thousands of prospective buyers.

"Bride's Home" Advertising Brings Out the Crowds

MERCHANDISING-minded builders will be interested in the advertising and promotion methods developed by James Wilson, president of Garden Homes, Inc., and his associates in their development at Northwood Park, Md. One of the most important of these associates is Mrs. James Wilson, who has the imposing title of publicity director and who takes an active part in the advertising program. The outstanding promotion stunt of last year was the "Bride's Home"—a demonstration home "dedicated to the modern bride." It was kept open for the entire month of May, during which thousands of visitors passed through it. A host of novel ideas contributed to the advertising success of

this venture, one of which was the inclusion of a Ford V-8 as part of the purchase price.

Tying in with the newly married couple idea, the house was offered completely furnished, from top to bottom, including furniture, draperies, silver, kitchen utensils, and even flowers growing in the flower boxes. The kitchen was stocked with groceries enough to get the newlyweds off to a good start.

Large newspaper advertisements and an attractive mailing piece were prepared featuring in a lively way the "bride's house" theme. It was pointed out that with the car, furnishings, groceries, all included in the purchase price, it made setting up housekeeping remarkably easy

and pleasant. Northwood Park is an attractive, wooded community in Maryland which serves the Washington market. The 200-home development has undergone a steady growth under the direction of James Wilson, president, Thomas E. Clark, vice president, and W. W. Smith, treasurer.

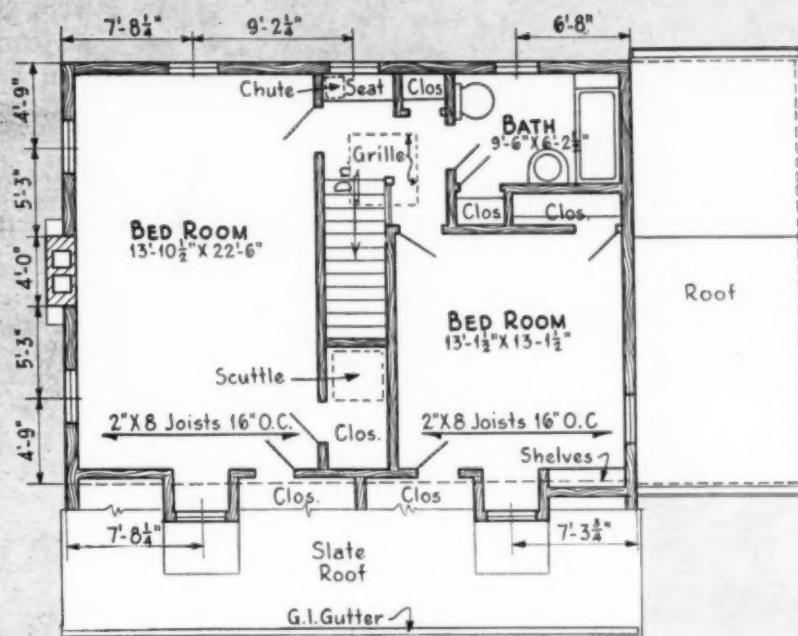
Plans of the "Bride's Home" as detailed on this page were prepared by James J. Baldwin. The house has a broad sweeping roof with an inviting and spacious front porch and a well proportioned attached garage. It has a substantial look that makes it fit well into the wooded environment. One of the features of the promotional plan was the stating of the price in an unusual figure, complete to dollars and cents. As shown in the advertisement above, the complete price as quoted on the house equipped with car, furnishings and groceries was \$10,867.54.

The house has a substantial 12-inch basement wall, thoroughly waterproofed. Roof is of Vermont slate. It is a 2-story Colonial type with a 13'10" by 22'6" living room, 2 large bedrooms and bath upstairs. A door leads from the attached garage into the kitchen providing a protected side entrance that many people find desirable.

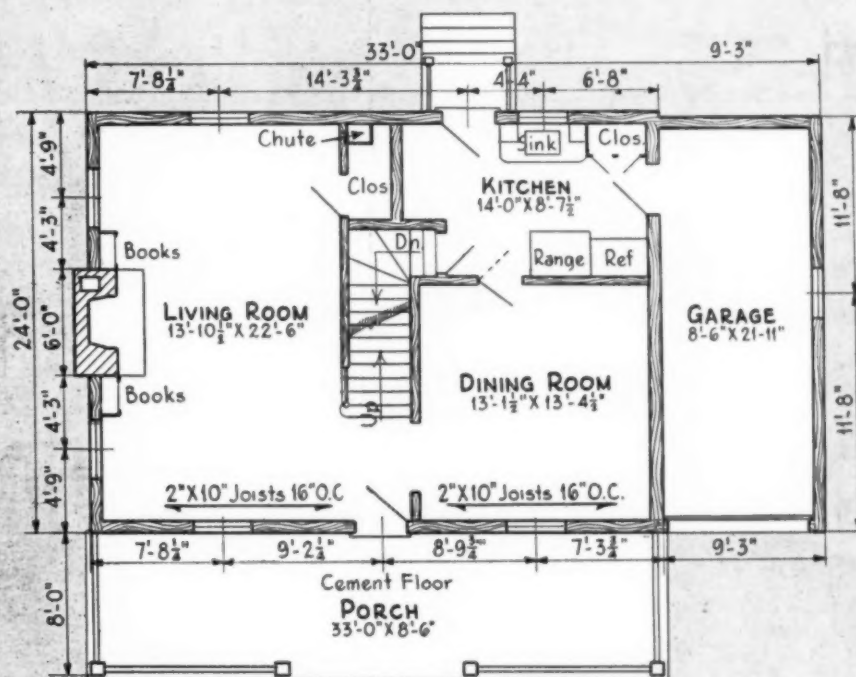
Equipment includes a National Radiator Corp. oil heating boiler and radiators, Magic Chef gas range, Certain-teed roofing and plastering materials, Capitol rockwool insulation, Oxford kitchen cabinets, Vermont slate roof, Lehman glass spray shield for the bathtub. House is fully insulated, weath-

(Continued to page 104)

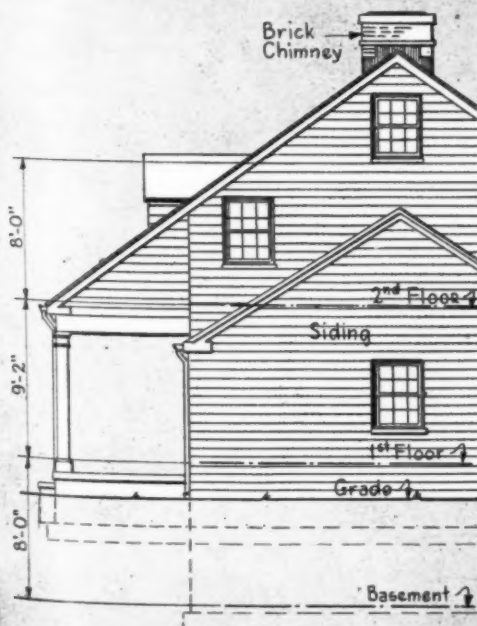
DETAILED DRAWINGS of the "Bride's Home" built by James Wilson in Northwood Park, Md., from plans by James J. Baldwin. The broad sweep of the roof, generous open porch and well proportioned garage wing give the house an attractive look that fits into the wooded environment.



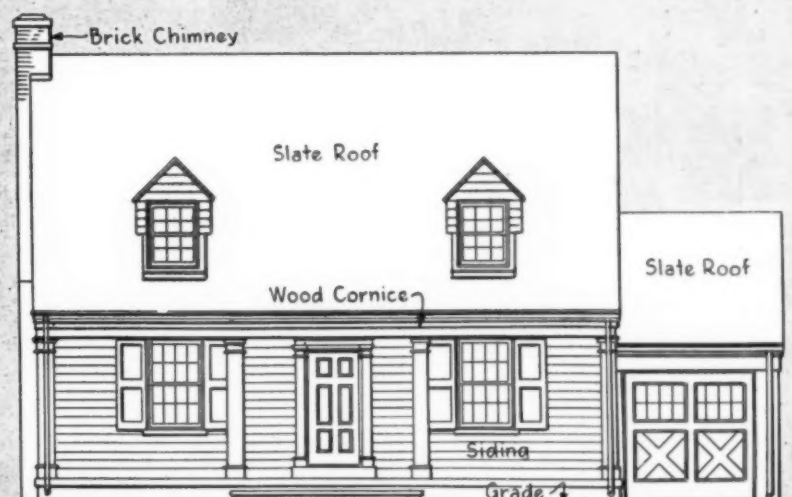
SECOND FLOOR PLAN



FIRST FLOOR PLAN



SIDE ELEVATION



FRONT ELEVATION



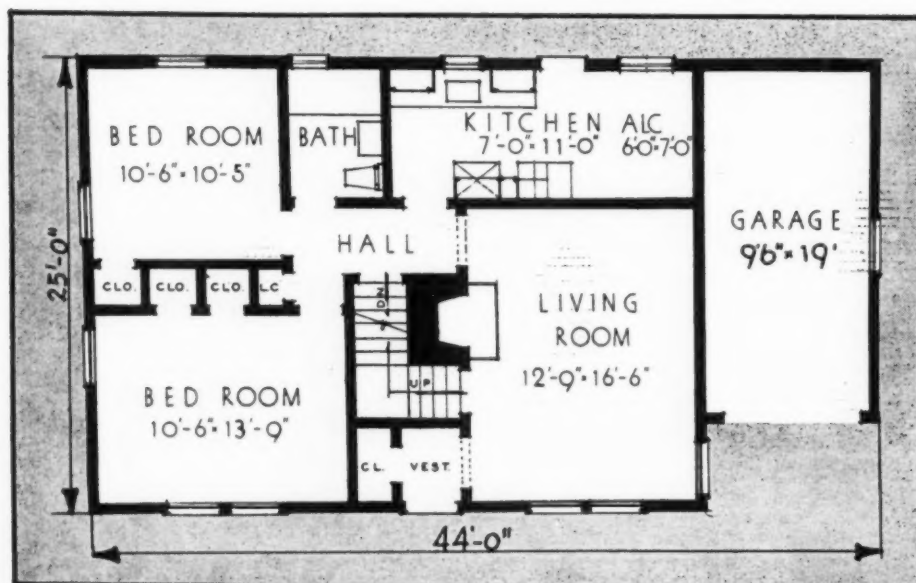
TWO BEDROOMS are provided downstairs in this Gibson-built house at Hewlett, Long Island, and two more may be added upstairs.

Cape Cod Style—Two or Four Bedrooms

WITH 35 years of building experience behind him, W. R. Gibson last year opened a new development, Sunbury at Hewlett, Long Island, in which he featured small Colonial homes of which the above design is a typical example. These were designed by Arthur E. Allen, 9004-161st St., Jamaica, N.Y. The Cape Cod house above is well proportioned and nicely detailed with a six-panel door, dentil cornice, shuttered windows. The living room is 12'-9" by 16'-6",

and there are two good-sized downstairs bedrooms and bath in addition to kitchen and alcove. Two additional bedrooms may easily be added upstairs, and a second bath directly above the downstairs bath could be included with the addition of a rear dormer. A clever feature of the interior design is the "hidden door" which conceals the attic stairs.

The Sunbury houses are built with Johns-Manville Weathertite insulating sheathing and Metallated Rock-



AMERICAN BUILDER
The Cost FIGURES
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ROOMS are well proportioned and have ample closets and good exposure. Stairs to the second floor are concealed behind a bookcase-door.

"Hidden Door" with Bookshelves

Appearance of Living Room Helped by Concealed Attic Door with Built-in Shelves

lath plaster base. They have poured concrete footings and foundations, 3 by 8 floor beams, J-M asbestos exterior wall shingles, tile bathrooms, Kohler fixtures.

Kitchen-dinette arrangement is attractive and cheerful, with Armstrong linoleum floors, custom-built cabinets and attractive washable wallpaper.

The builder provides either a one-pipe steam heating system with Kohler boiler or Bryant gas air-conditioning unit, Minneapolis Honeywell Chronotherm thermostat and Ruud hot water heater. The houses are on spacious plots in an attractively laid out community.



HOW THE "HIDDEN DOOR" LOOKS when open is shown in the upper view. BELOW is face of door with attractive built-in bookshelves.

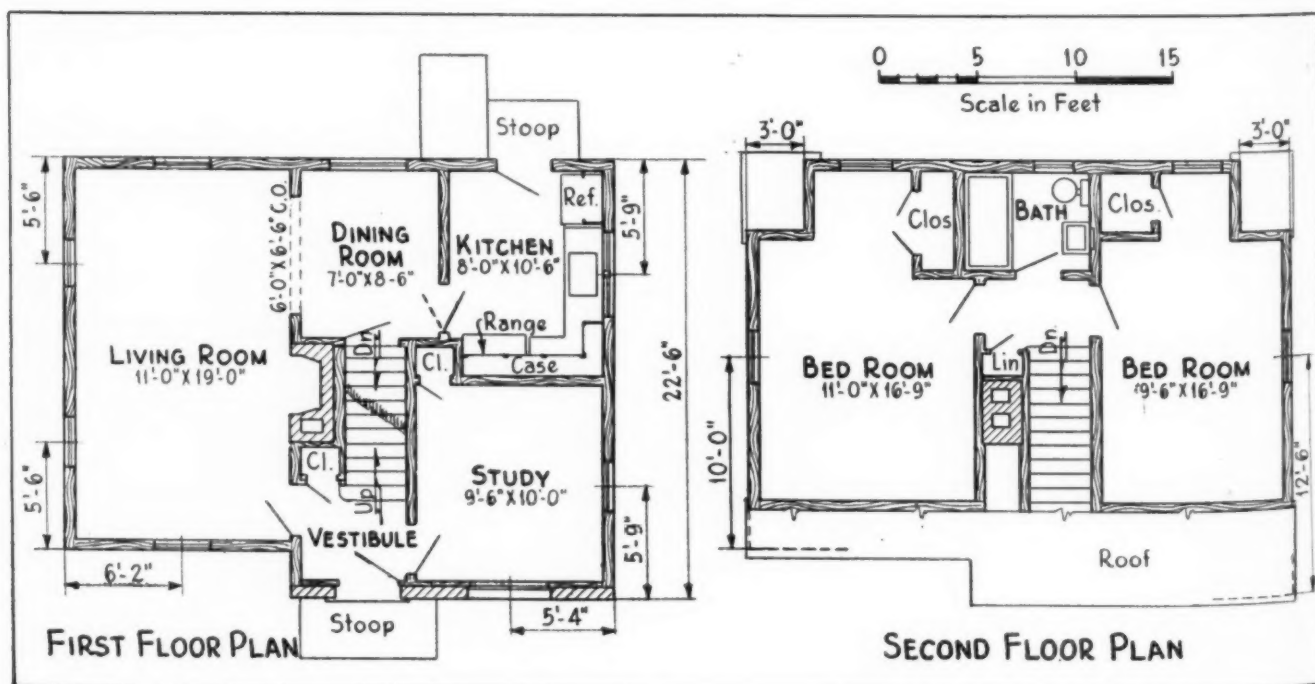




TWO NEW ENGLAND COMPACT COTTAGES

Wallace B. Goodwin, Builder
Norris F. Prentice, Architect

IN A RURAL LOCATION near Hartford, Conn., this little cottage with a stone front fits nicely. The small downstairs study is an attractive feature. The stairs, coat closet and chimney are economically grouped in center, making possible an 11 by 19-foot living room. With basement dimensions of only 23 by 29 feet and a cubage of 15,320, it provides much usable space.



Winter Air
Conditioned,
Compact,
Low Cost

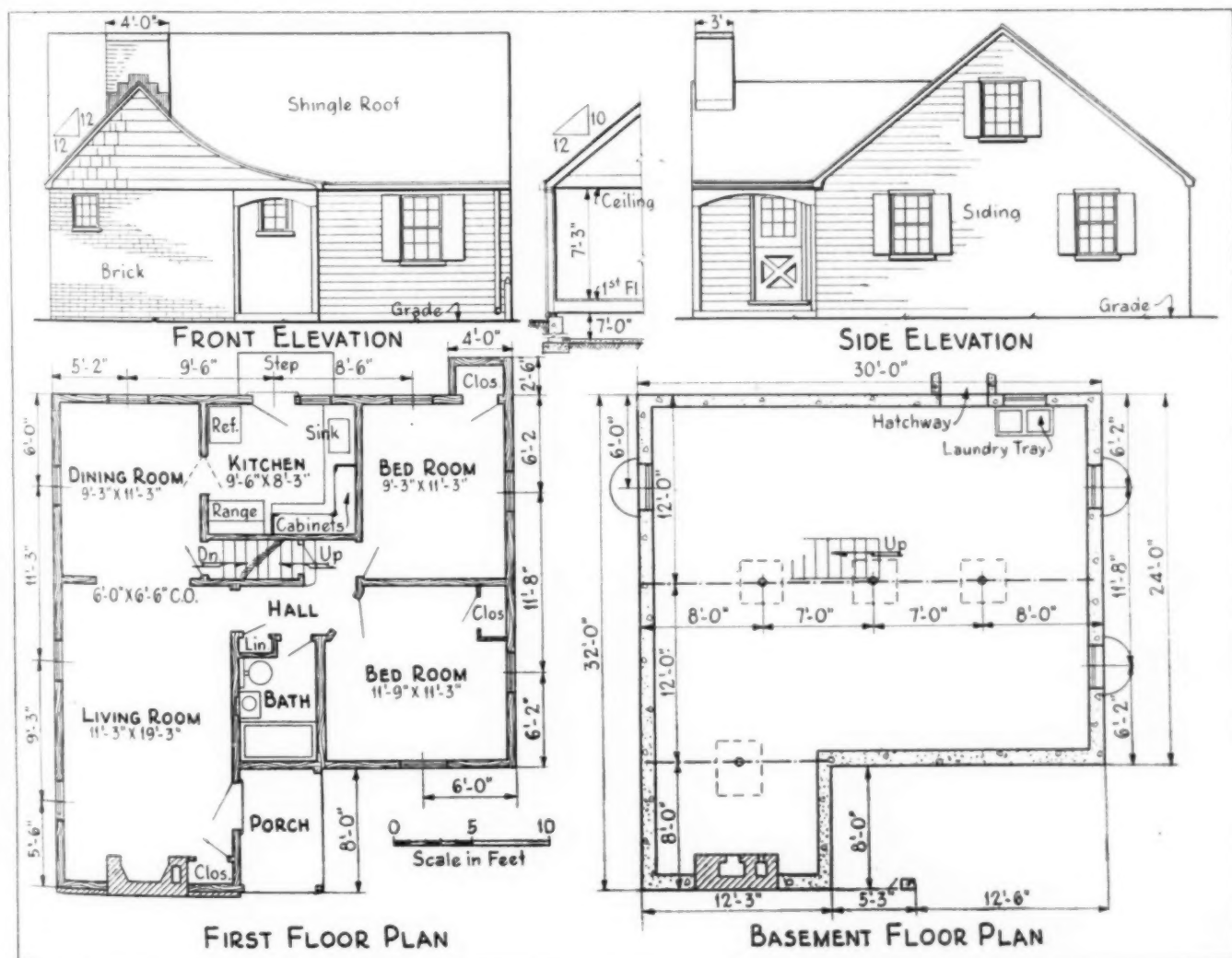
AMERICAN BUILDER
Real Cost Figures
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ARCHITECTURAL DETAILS below by Norris F. Prentice, successful young architect of Elmwood, Conn., show another one of the small Colonial homes built by Wallace B. Goodwin. The plan affords good circulation, with the 11 by 19-foot living room, dining room, kitchen and two bedrooms on the first floor. In addition, the large open attic can be used for storage or two extra future bedrooms.

Heating and winter air conditioning are provided by a Chrysler Airtemp unit. Other materials include red cedar clapboards, U.S.G. Rocklath for plaster base with foil back on outside walls, mineral wool insulation in ceilings, Morgan narrow Colonial trim, Armstrong linoleum on kitchen floors and counters, Veos metal tile in bath with rubber tile floor. Cubage is 16,200.



EARLY AMERICAN STYLE; CALIFORNIA PLAN

Milton J. Black, Architect; Edward J. Thayer, Builder

FROM THE exterior, this Westwood Hills, Calif., home has the appearance of a small Colonial type cottage. In plan, however, the full extent of the house can be seen with its open patio in the center. Rooms are grouped about this feature for good light and ventilation; the patio floor is of brick and there is copper screening across this space above so that no screens are needed on the facing windows and

doors. This allows free access to this enclosed area for outdoor living.

The entry hall carries out the Colonial styling with pine paneled walls. The large living room also has pine paneling around the fireplace and at the opposite end. Closet and storage space is generous throughout. The bath off the master bedroom has a separate toilet stall.



CONSTRUCTION FEATURES: 1x10 inch channel siding on frame; red cedar Royal shingles; all-copper gutters and flashings; 13/16 inch select oak plank flooring; select birch interior trim and doors; all-copper piping; two-unit gas furnaces as heating system; automatic water heater; piped sprinkling system.

AMERICAN BUILDER
The Costly FIGURES
FOR THESE HOUSES
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BEAUTIFULLY designed, modern home at Glendale, Calif., built by R. I. Snyder.

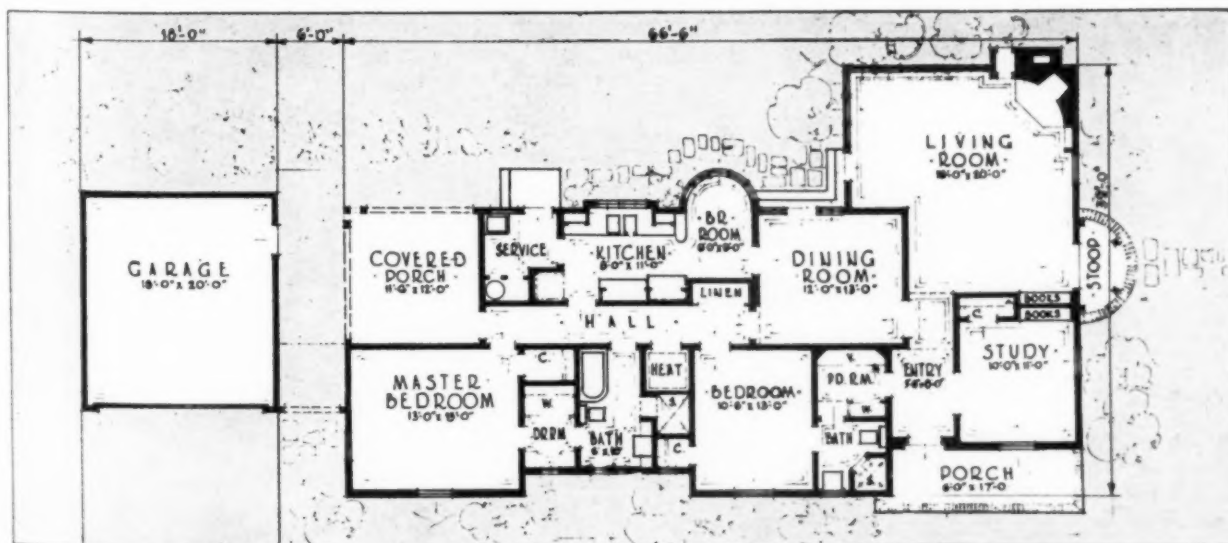


VIEW from the circular dinette into the cheerful, well laid out kitchen.

"CONTEMPORARY" DESIGN

A SPLENDID example of the modern type of California home laid out for comfortable living with a large living room which has a corner fireplace and a large bank of windows looking out onto a patio.

Builder K. I. Snyder equipped the house with a Pacific gas-fired forced-air furnace, Standard plumbing fixtures, Toncan copper-bearing galvanized iron sheet metal. Wolmanized lumber is used below the floor line. Architect was A. R. Sedgley of Los Angeles.





BALTIMORE COLONIAL WITH GARAGE WING

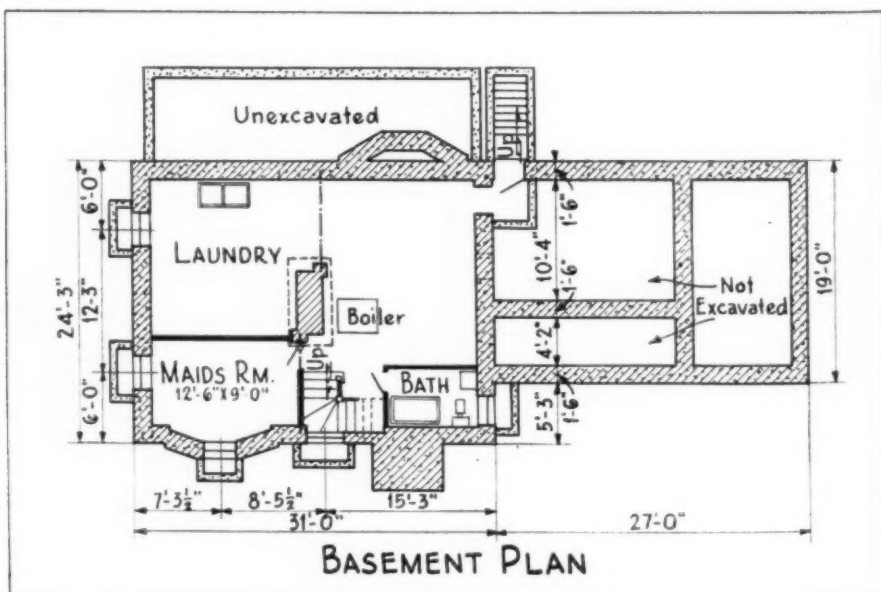
A. Arnold & Son, Builder
T. Worth Jamison, Jr., Architect

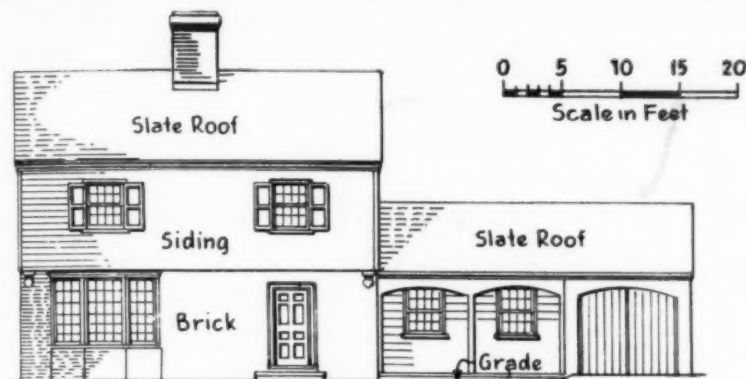
LOCATED in "The Orchards" section of Baltimore's Roland Park residential community, this attractive house has a dignified, substantial appearance and unusual charm. The long, narrow wing which houses the garage, kitchen and pantry is beautified by an open porch with arched openings similar to the garage door entrance.

THE BUILDERS, A. Arnold & Son, have been in business for more than 20 years in Baltimore. The house is of substantial masonry construction, with a slate roof, Chamberlain weatherstripping, Morgan woodwork, U. S. Gypsum plaster products, Sargent hardware, Mineral Wool insulation, copper gutters, spouts and screens. The house contains 31,700 cu. ft., with overall dimensions of 25 by 58 feet.

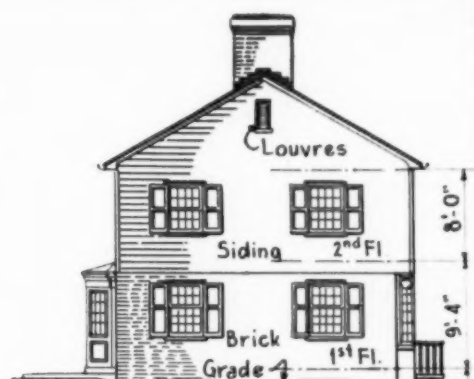


PLANS, elevations and section at right and on opposite page indicate the complete and careful planning of this Baltimore home designed by Architect T. Worth Jamison, Jr., and built by A. Arnold & Son, Baltimore.

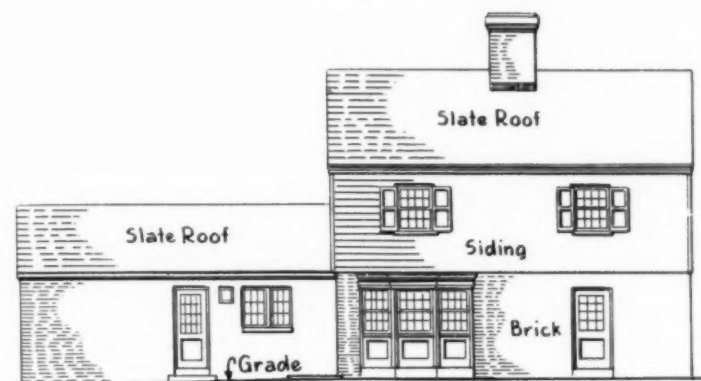




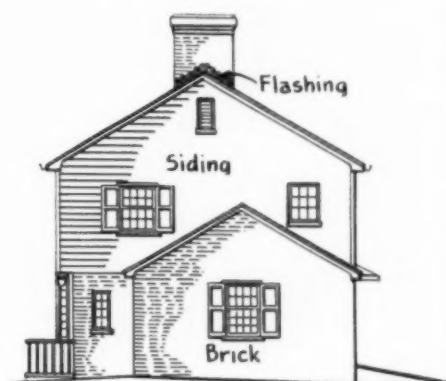
FRONT ELEVATION



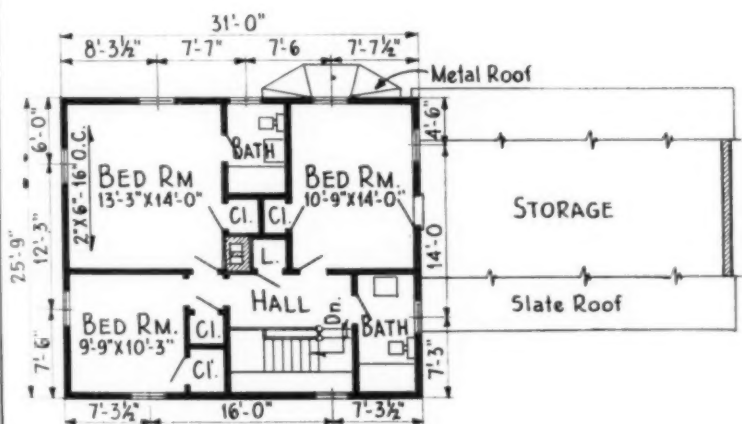
LEFT ELEVATION



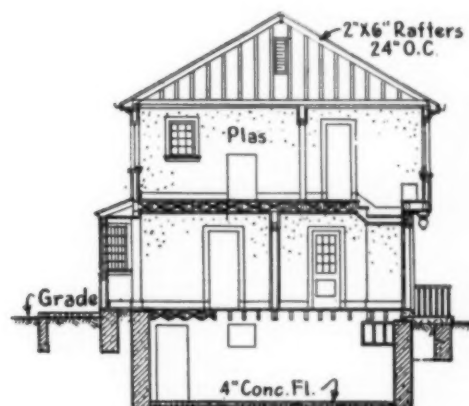
REAR ELEVATION



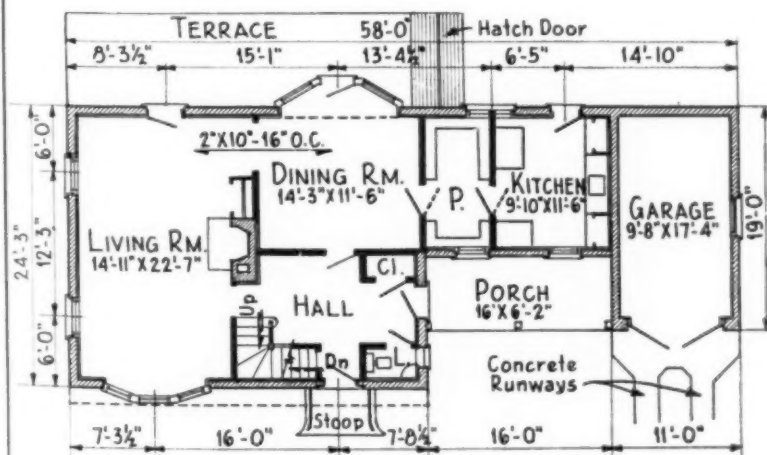
RIGHT ELEVATION



SECOND FLOOR PLAN



CROSS SECTION



FIRST FLOOR PLAN

Practically Planned Skillfully Detailed

ARCHITECT T. WORTH JAMISON has produced a livable, salable house at reasonable cost. The long wing housing garage, kitchen and pantry is beautified by an open porch.



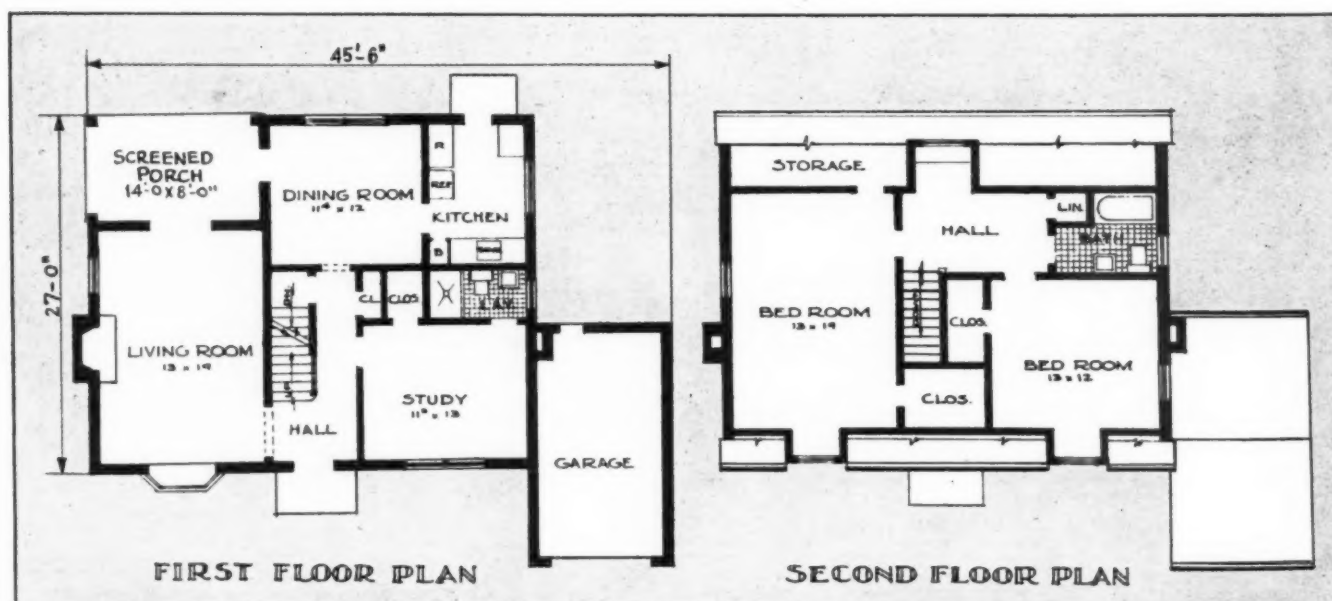
STUDY-BEDROOM AND BATH on first floor are important in the plan of this attractive Washington home designed and built by Cooper Lightbown & Sons in their Brookdale subdivision.

HOME OF WALTER J. TAFT, BROOKDALE, MD.

Cooper C. Lightbown & Sons, Builders

WHEN Walter J. Taft, Washington correspondent of the Simmons-Boardman Publishing Corporation, selected a home recently, he picked the above house designed and built by Cooper Lightbown & Sons in their successful Brookdale, Md., subdivision. The house has many attractive features, including the screened porch at rear into which both living room and dining room open. The rooms are

well proportioned and well lighted, and the 13 by 19 foot master bedroom is unusually spacious. Equipment includes Fenestra steel sash, Curtis Silentite windows and Mitertite trim, Overhead garage doors, Johns-Manville Rockwool, Bangor slate roof, Imperial wallpaper. Synchronomatic oil burning air conditioning system with Bettendorf burner, Tuttle & Bailey Registers. Cubage, 25,000.



LOCATED on a corner lot in Elmhurst, Ill., this attractive little Colonial house has considerably more floor area than is apparent from the view above. There is no waste space; all rooms are large for this type of design. Kitchen has ample room for a breakfast set.

AMERICAN BUILDER
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T. J. Pawlias,
Chicago, Builder

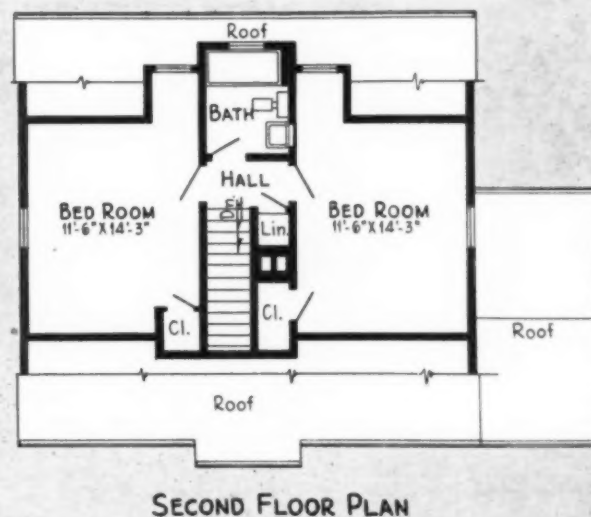
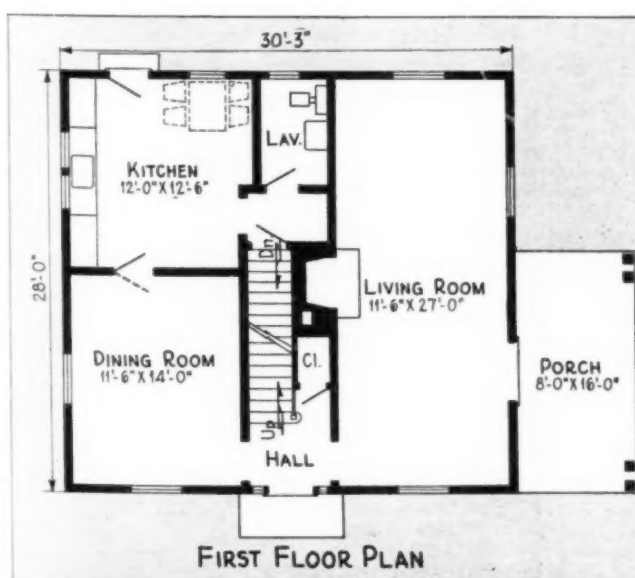


TRIM EXTERIOR—FIVE GOOD SIZED ROOMS IN PLAN

THE $\frac{5}{8}$ x $\frac{7}{2}$ -inch redwood bevel siding gives a deep shadow line which adds to the trimness of this little house. Roof is covered with 4-in-1 blue-black slate surfaced asphalt shingles; dark blinds harmonize. The 8x16 porch off the living room has a concrete floor, and when screened in will give appreciated outdoor living space.

Other construction features are as follows:

10" poured concrete foundation waterproofed with asphalt; framing, No. 1 yellow pine, 2x10 first floor joists, 16" o.c., 2x8 second floor; outside finish white pine; red oak floors, except linoleum in lavatory, bath, kitchen; rock wool batts over second floor ceiling; plaster on rock lath; Weil automatic sump pump connected to overhead sewer discharge to assure a dry basement.



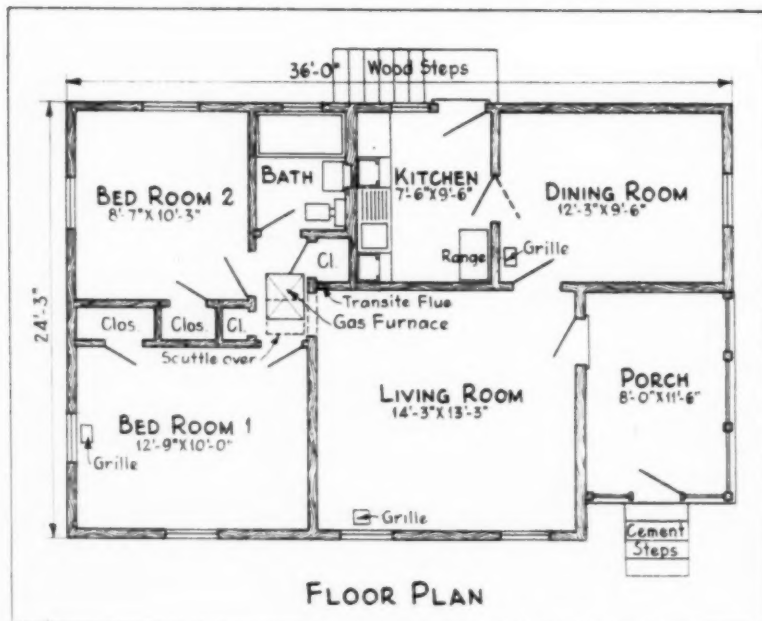


Two Small Cottages Designed with Space-Saving Heating Systems

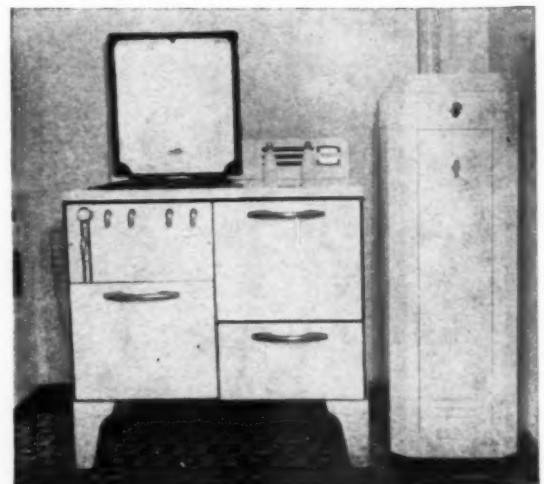
These Georgia and Michigan Low-Cost Homes Are Compact, Carefully Planned

THE GAS floor furnace in this Atlanta, Ga., house, built by Palmer and Sawtell, is located in the central hall. The builder gives the buyer option as to a front or side entrance with this plan. The equipment provided

consists of a Sunbeam floor furnace and Hotstream gas water heater. Compactness of plan assures low cost. The screened porch is an attractive feature of this little house, which was designed by Architects Burge and Stevens.



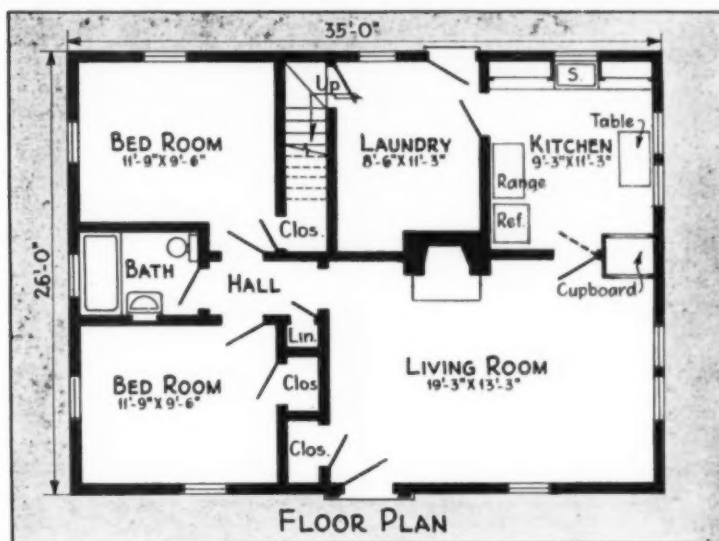
WHEN THE WATER HEATER is as good-looking as this one, there is no reason why it cannot be placed in the kitchen as Builders Palmer and Sawtell did. 5-room floor plan at right is compact and livable.



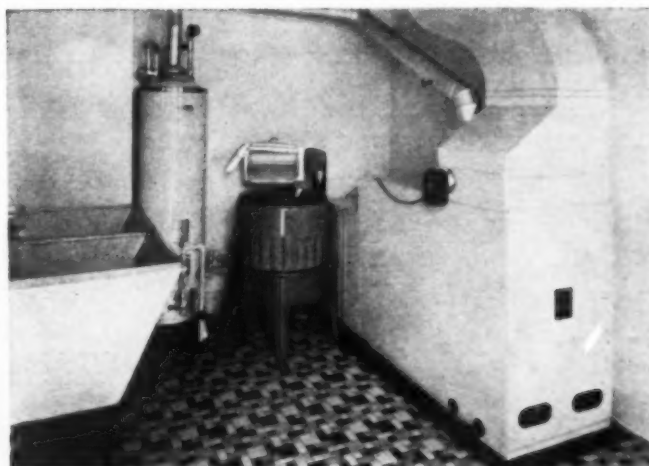
AMERICAN BUILDER
Real Cost FIGURES
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IN MUSKEGON, Mich., Builder Dave Stehnholm recently erected this practical looking small home. The outstanding feature is the utility room off the kitchen, which houses the Bryant gas-fired air conditioner and the Ruud automatic gas water heater, as well as the laundry equipment. This room also serves as a place to leave muddy rubbers and clean off dirty shoes before entering the kitchen. An overhead duct system conveys the heat to the individual rooms. The floor plan is compact and simple, and therefore inexpensive, with 2 fair-sized bedrooms and a bath. There is a large attic which could be used. Exterior is of cement asbestos shingles which eliminate need for painting. The roof is of colored asphalt shingles.



THE ALL-GAS KITCHEN is large and cheerful, with a space for dining.



UTILITY ROOM contains gas furnace, water heater and laundry.

PruCost

Reg. U.S. Pat. Off.

Figures for American Builder Homes

HOME DESIGNS ON PAGES AS NUMBERED

Units of Construction	Aug. 44	Aug. 46	Aug. 48	Aug. 49	Aug. 50	Aug. 51
Basement Walls, lin. ft.	114	118	101	124	300	0
Trench Walls, lin. ft.	85	40	0	0	36	354
Basement Floor, sq. ft.	710	850	530	700	2450	0
Garage Floor, sq. ft.	250	200	0	0	0	360
Excavation per ft. deep, cu. yds.	33	39	27	35	90	0
Outside Walls, squares	27	17.1	16	15	43	26.2
First Floor, squares	7.36	8.5	6	8.28	23	18
Second Floor, with fin. flg., sqs.	7.50	0	4.30	0	0	0
Second Floor, without fin. flg., sqs.	0	0	0	0	0	0
Ceiling, sqs.	7.50	10.5	6	8.28	23	21.6
Roof Pitch, inches rise per ft. run	9"	12"	10"	10"	9"	5"
Roof, squares	13.70	15.9	8.25	12.20	40	26
Hips and Valleys, lin. ft.	20	20	0	32	110	214
Cornice, type and lin. ft.	C & F-117	C & F-205	C & F-54	C & F-88	C & F-184	0
Cornice, type and lin. ft.	4"-54	0	4"-56	4"-50	4"-250	8"-295
Partition, lin. ft.	158	143	113	90	250	242
Inside Finish OS Walls, lin. ft.	230	138	184	125	300	211
Front and OS French Doors, opgs.	1	1	1	1	5	4
Rear and Grade Doors, opgs.	1	1	1	1	1	3
Garage Doors 8 ft. wide	1	1	0	0	0	2
Inside Doors and Cased Opgs., opgs.	14	13	12	10	18	23
Windows and Casements, opgs.	20	12	18	15	38	25
Gable Sash and Louvers, opgs.	2	4	0	2	6	0
Chimney, lin. ft.	34	32	30	25	32	19
Main Stairs	1	0	1	0	0	0
Porch Floor, sqs.	2.80	0	36	58	1.50	3.15
Porch Ceilings, sqs.	2.64	0	0	40	1.20	1.51
Porch Beam, lin. ft.	49	0	0	13	26	39
Porch and Balcony Post and Newels, No	4	0	0	3	7	11
Porch Roof, sqs.	3.68	0	0	0	0	.24
Porch Cornice, lin. ft.	34	0	0	0	0	15
Porch and Deck Rail, lin. ft.	6	0	0	0	0	0

HOME DESIGNS ON PAGES AS NUMBERED

Units of Construction	Aug. 52	Aug. 54	Aug. 55	Aug. 56	Aug. 57
Basement Walls, lin. ft.	140	123	114	0	0
Trench Walls, lin. ft.	167	70	44	143	136
Basement Floor, sq. ft.	640	715	814	0	0
Garage Floor, sq. ft.	190	175	0	0	0
Excavation per ft. deep, cu. yds.	35	35	38	0	0
Outside Walls, squares	30.50	28	15.6	13.6	14.1
First Floor, squares	8.50	8.40	8.1	8.1	9.1
Second Floor, with fin. flg., sqs.	6.90	6.63	5.2	0	0
Second Floor, without fin. flg., sqs.	2.90	.50	2.9	0	6.2
Ceiling, sqs.	8.50	8.40	8.1	8.1	9.1
Roof Pitch, inches rise per ft. run	7"	9"	11"	10"	10"
Roof, squares	16	16	11.8	11.2	12.6
Hips and Valleys, lin. ft.	0	50	0	0	22
Cornice, type and lin. ft.	C & F-90	C & F-124	C & F-170	C & F-142	C & F-70
Cornice, type and lin. ft.	8"-126	4"-80	0	0	12"-75
Partition, lin. ft.	190	220	144	94	114
Inside Finish OS Walls, lin. ft.	244	240	168	118	118
Front and OS French Doors, opgs.	3	3	3	1	1
Rear and Grade Doors, opgs.	2	1	1	1	1
Garage Doors 8 ft. wide	1	1	0	0	0
Inside Doors and Cased Opgs., opgs.	16	13	13	10	11
Windows and Casements, opgs.	26	23	16	10	12
Gable Sash and Louvers, opgs.	2	0	0	2	3
Chimney, lin. ft.	39	68	32	0	24
Main Stairs	1	1	1	0	0
Porch Floor, sqs.	3.50	1.50	1.2	1.23	.24
Porch Ceilings, sqs.	1	1.12	1.2	.83	0
Porch Beam, lin. ft.	16	22	31	20	0
Porch and Balcony Post and Newels, No	3	3	4	5	0
Porch Roof, sqs.	0	0	1.9	1	0
Porch Cornice, lin. ft.	0	0	26	20	0
Porch and Deck Rail, lin. ft.	8	0	0	0	0

Necessary Home Equipment, Fixtures, Accessories, Extras

Since the above surveyed items cover only the actual superstructure of the house, you should figure and add the following items as specified or wanted (and don't forget Overhead and Profit):

Areaways, Celler Sash, Coal Chute, Basement Partitions & Doors, Attic Flooring, Attic Stairs, Blinds, Gutters & Downspouts, Fireplaces,

Built-in Cabinets, Rail & Newels for Stairs and Stair Well, Beamed Ceiling, Weatherstrips, Tile Work, Plumbing, Heating & Air Conditioning, Lighting, Terraces, Patio Walls or Fences, Sidewalks including Porch Steps, Driveways, Unattached Garages. Also add for painting and decorating if not included in Unit Costs.

Air Conditioning Today

No. 2. Where the Customers Are Now.

By **HARRY M. HITCHCOCK**

Editor, Information Bureau,
National Warm Air Heating
and Air Conditioning Ass'n.

THIS is the second of four articles on the present status of domestic air conditioning.

SOME very wonderful inventions have proved woeful disappointments, not only to their inventors but to their backers. And this in spite of the fact that nobody could find anything wrong with them, except that . . .

The customers did not go for them.

But when you've said that, you've closed the book. All the blueprints and slide-rules and working models between here and Jericho; all the experiments and tests and alterations in design and bug removals; all the faith, enthusiasm, zeal and energy, money and advertising genius—serve only to ensconce you that much more securely behind the eight-ball, unless (a) there are customers, and (b) the customers buy.

And customers are very queer people. I'm one myself a good share of my time; and so are you. But we are prone, when we momentarily stop being customers and start trying, ourselves, to sell something, to forget how we ourselves acted a moment before when we were customers. And when other people act in precisely that way toward us . . . heavens, how their obtuseness hurts and grieves us!

This observation applies with particular force just now to the efforts some good folk are making both to find air conditioning customers and to persuade them to buy. A certain plaintive note that is sadly familiar to me has crept in here and there. And there's really not the slightest need of it.

Are there, or are there not, enough air conditioning customers in the United States to make an industry . . . on the scale by which Americans measure an industry? Let's see what we can find out.

Nobody, so far as I have been able to discover . . . and the National Warm Air Heating and Air Conditioning Association has been trying in every way it could think of to find out . . . knows with any great degree of accuracy just how many private residences, equipped with central heating plants, there are in the United States today. Not that the people who live in such residences are the only possible customers for air conditioning; but they'll do to start with.

We do feel, however, that it is entirely safe and probably conservative to say there are something over eleven million of them. To be sure, some of them . . . both the houses and the furnaces . . . are pretty venerable, not to say decrepit. But by the time you read this there will be quite a few thousand more new ones than there were when I wrote it; and after we've sold some sort of air conditioning to each of these eleven million homes, we've still got better than a fair chance of selling air conditioning (though perhaps not quite the same sort) to several hundred thousand . . . perhaps another million or so . . . of apartment dwellers.

Down in Memphis, for example, there's a new all-concrete apartment house, with ninety-six apartments in it, to which the finishing touches are being put; and every one of the ninety-six is designed for year-round air conditioning, based on an individual forced-air heating system. If that works—and the builders seem pretty confi-

(Continued to page 90)



Rentability and Salability Are Gained by Modernization

By **WALTER A. McDOUGALL**

Architect and Engineer, Chicago

YOU HAVE seen many a human derelict and wondered what was the story of his life; interesting no doubt. Derelict buildings are just as interesting and I have pondered over the lives of many buildings and wondered why they are not occupied.

There are many interesting factors in modernizing: The economic changes making poor folks out of rich folks; the development of the sun parlor separate from the

living room, then as a part of the living room and now the combined living and dining room; the development from heavily curtained small windows to the greatest number of window openings possible to obtain.

For 30 years people have taken pride in their bathrooms. For the past ten years people have been taking increasing pride in their kitchens. Until ten years ago little thought was given to the efficient planning of the kitchen, and the woman who could do a good job of cooking in the old fashioned kitchen was a marvel.

There are many factors in the obsolescence of apartment buildings. One of the greatest factors in my estimation is poor planning with regard to light, air and ventilation. Buildings originally planned to have good light, air and ventilation are easily modernized, no matter how old they are.

Our old apartment buildings in Chicago are bad enough but we have never had apartments such as the so-called "old law tenement" in New York—four stories high built to cover about 90 per cent of the land. Most of these buildings are vacant today.

The erection of these New York tenements caused many studies to be made regarding light courts of suf-



55th St. and Ellis Ave. Building, Chicago, modernized and restyled; 4th story removed, bays torn off; revised floor plan shown opposite.





"BEFORE AND AFTER" baths in 55th St. and Ellis Ave. Building.

ficient size to admit light and air.

In the past forty years the pendulum has swung from 90 per cent of land coverage to 25 per cent in the most closely built government housing projects of recent date—some of them as low as 15 per cent land coverage.

Even so, our new building ordinance in the City of Chicago, coupled with the zoning ordinance, allows 60 per cent coverage of an inner lot to 75 per cent of a corner lot in a second volume district and 75 to 90 per cent in third volume districts.

We in Chicago have to contend with buildings as old as 70 years. Buildings of that age in America are considered terribly old, yet the brick walls, foundations, wood joists and in many cases the plaster are just as good as ever. Many buildings in Europe, like the Milan Cathedral in Italy built 390 years ago, are still the show places of

Europe, showing that if the building was originally well planned and the material that went into this building was of good quality, you still have a good building.

In the matter of appearance, architectural styles have changed in the same manner, although not so rapidly, as the changes in women's clothing. The brick manufacturers have changed from pressed brick to vitrified brick. Other manufacturers have either changed their products or brought out new ones. We may now apply to the face of old buildings two inches of terra cotta, brick or even granite and less thickness of marble, enameled iron or structural glass.

Oak, once commonly used in interiors, has given way to imitation walnut and mahogany.

Then the poor imitations have given way to painted finishes or given way entirely so that we are happy to have openings without wood casings and the painted woodwork in many cases is giving way to woodwork of light tone, finished in the natural color of the wood.

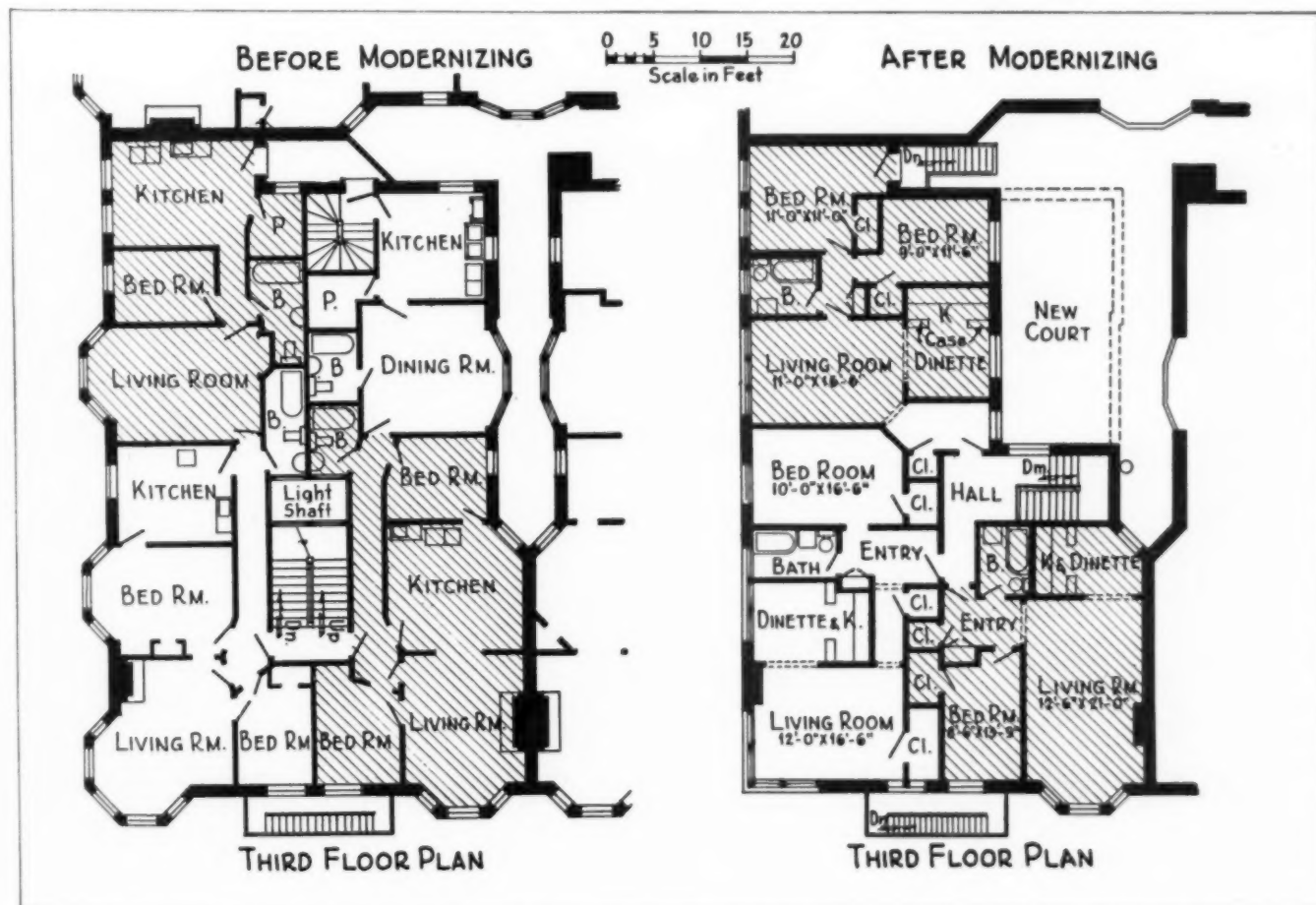
We are prone to think of modern buildings in terms of bare walls, windows in corners of rooms, chrome or aluminum gadgets. These are some of the trappings of modern, but real modern is caused by deeper thinking.

Modernism is making the best use of our modern steel, reinforced concrete, modern lighting and electric appliances, modern heating, various new materials and the growing knowledge of cleanliness and sanitation.

Modernism is caused, too, by being poor.

In building the Edgewater Beach Hotel, trim was omitted from around the windows in order to save several thousand dollars. This has since been considered swank.

Previous to 1864 all buildings were built of masonry with some use of cast iron or wrought iron. Steel beams were first made in 1886. This made possible wider open-



"BEFORE AND AFTER" plans of a typical floor in the 55th and Ellis Avenue Building, Chicago, as viewed on opposite page.

ings, taller buildings, and more rapid construction.

The first reinforced concrete building in America was built in 1887. However, little was done with reinforced concrete until 1903. Since then reinforced concrete has made rapid strides.

Many new building materials have been put upon the market, such as wall boards of various kinds finished and unfinished, bright metals which do not tarnish, linoleums and other resilient floors.

While our oldest buildings are 70 to 80 years old the greatest mechanical advance in the history of mankind has taken place in the past 60 years; the greatest real obsolescence in our buildings is along those lines.

We find all phases of change in our Chicago buildings.

Plumbing has made such rapid strides that fixtures now only 20 years old are laughed at by tenants. The fixtures, 30 or more years old, must be replaced.

Methods of heating water have changed and improved on account of tenant requirements for hot water at all hours.

Heating more than one apartment from a central steam plant was first made in Lockport, New York, in 1877 by Birdsell Holly. The development of the steam heating plant through these past 62 years has left in our Chicago buildings various types of boilers, radiators and methods of steam distribution.

Advances in Use of Electricity

The incandescent lamp was invented little more than 50 years ago, and the electric generator and electric motor making rapid changes in their development from that time has given to us an exceedingly rapid change in the electrical installations of our buildings.

Twenty-five years ago one watt per square foot was considered ample wiring provision for apartment or office buildings. Today we would not dare wire an office building for less than 4 watts per square foot. Many are using 8 watts per square foot, including stores and apartments.

People are now using so many electrical appliances, including lamps, radios, electric razors, vacuum cleaners, curling irons, flat irons, waffle irons and small grills and electric refrigerators, that we now have a load in almost any apartment of 4 to 6 watts per square foot. Luckily we find the average peak load to be about 34 per cent of the connected load.

The Marquette Building in Chicago is an excellent example of modernization, a building forty-seven years old and very much up-to-date. Many predictions had been made that a steel structure was good for only forty years.

The world's first skeleton frame building, the Home Insurance Building at Adams and LaSalle, was wrecked a few years ago and at the age of forty years the steel was found to be perfect.

The Capitol Building, also in Chicago, is now being wrecked at the age of forty-six years and it has just been reported that the steel there was in perfect condition.

We are thinking principally of apartments. In many apartment buildings, there is also the problem of stores and offices and the question today is of modernizing these buildings in such a way that it will have a beneficial effect on the rentability and salability of such property.

Some buildings need comparatively little work done on them to enhance the rental value of the property. One building I am thinking of shows how truly cleanliness is next to godliness, and that dirt bespeaks carelessness and begets slums.

This block of our one story store buildings had been allowed to degenerate and rubbish to accumulate. About ten wagon loads of rubbish were removed from the

premises. A survey was made comparing the property in which we were interested with the block on either side of it. The recommendation was made to unify the four buildings on our property by removing some old cornice and pediment and extending an enameled metal frieze along the building above the show windows. The rest of the building, approximately 60 per cent, was painted. Some of the store fronts were changed from old iron mouldings to new aluminum mouldings, but this general cleanup and paint made the entire block of buildings stand out among its neighbors and increased the rentals approximately 50 per cent. It also induced the Atlantic and Pacific Tea Company to retain the large store which they occupied at the end of the block and from which they had threatened to move.

Time to Modernize

There comes a time in the management of an apartment building when the building is just carrying itself. In spite of all your efforts, you cannot increase the net yield by management alone, you cannot reduce expenditures nor increase income. When this time arrives, *modernize or wreck*.

A building of this class is the Alwyn Court Apartment Building, New York City. It had been a highgrade building with large apartments for 28 years, from 1908 to 1936. Depression stopped the rental of large apartments and the investment suffered \$30,000 annual loss.

The building is a fireproof steel and tile arch building. It cost the Dry Dock Savings Institution \$888,342. They spent 56 per cent of that amount, or \$500,000, to remodel the interior from 22 suites to 72 apartments and changed the building from a \$30,000 annual loss to a net return of \$27,600 received from a gross rental of \$137,460.

Thirty thousand dollars loss plus \$27,600 gain equals \$57,600 annual improvement or 11½ per cent on the new money invested. The entire investment was changed from a 3.4 per cent loss on the original to a 2 per cent gain.

Another Profitable Modernization

A different type of building, a building of ordinary construction on the south side of Chicago, 55th Street and Ellis Avenue, built about 1892 for the World's Columbian Exhibition, had reached a point in 1935 where there was no loss but no profit. The building has been built with fire walls dividing it into 5 sections (see illustrations on two preceding pages).

We were commissioned to remodel one of the sections. In order to hold to our scheme for remodeling the entire property, we were forced to do the most difficult section first. This section comprised 10 apartments and two stores at a total annual rental of \$4,116. An expenditure of \$25,000 in modernizing increased the annual rental to \$7,140 showing on the face of the returns a 12 per cent return on the new money invested. We are assured, however, by the owner's representative that on account of various operating and insurance changes the new money is actually earning 19 per cent and that the entire building is now showing a 4 per cent return.

The old apartments were averaging less than \$18 per month. The new apartments average \$43-1/3 per month.

To build this building at present cost of 35 cents or more per cubic foot would cost \$41,000. The depreciated value of the old building at 8 cents per cubic foot would equal \$9,000. Add to that \$25,000, the cost of modernizing, giving a total of \$34,000. A \$41,000 building for \$34,000 puts an additional \$5,000 value on the old building or a saving of \$16,000.

There are two things of interest in this building:

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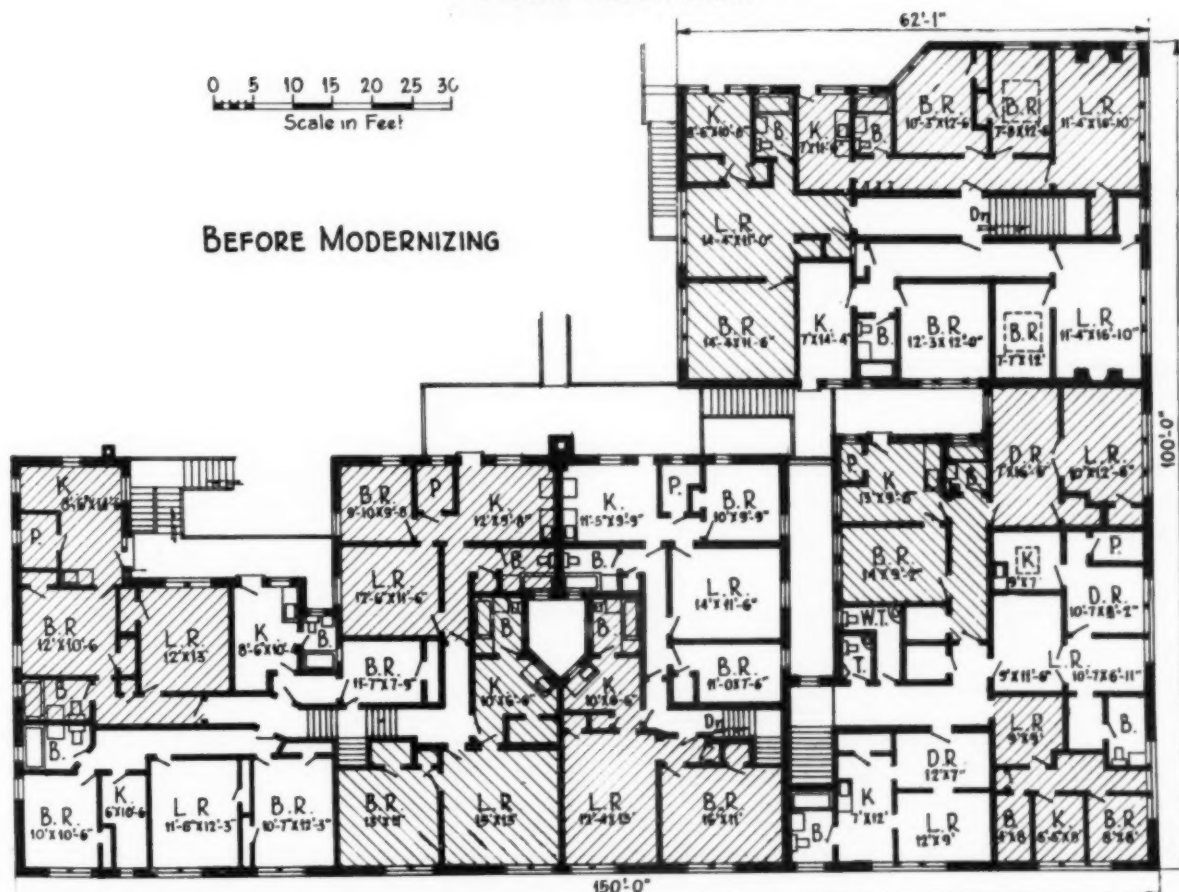
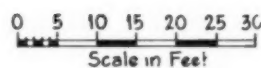
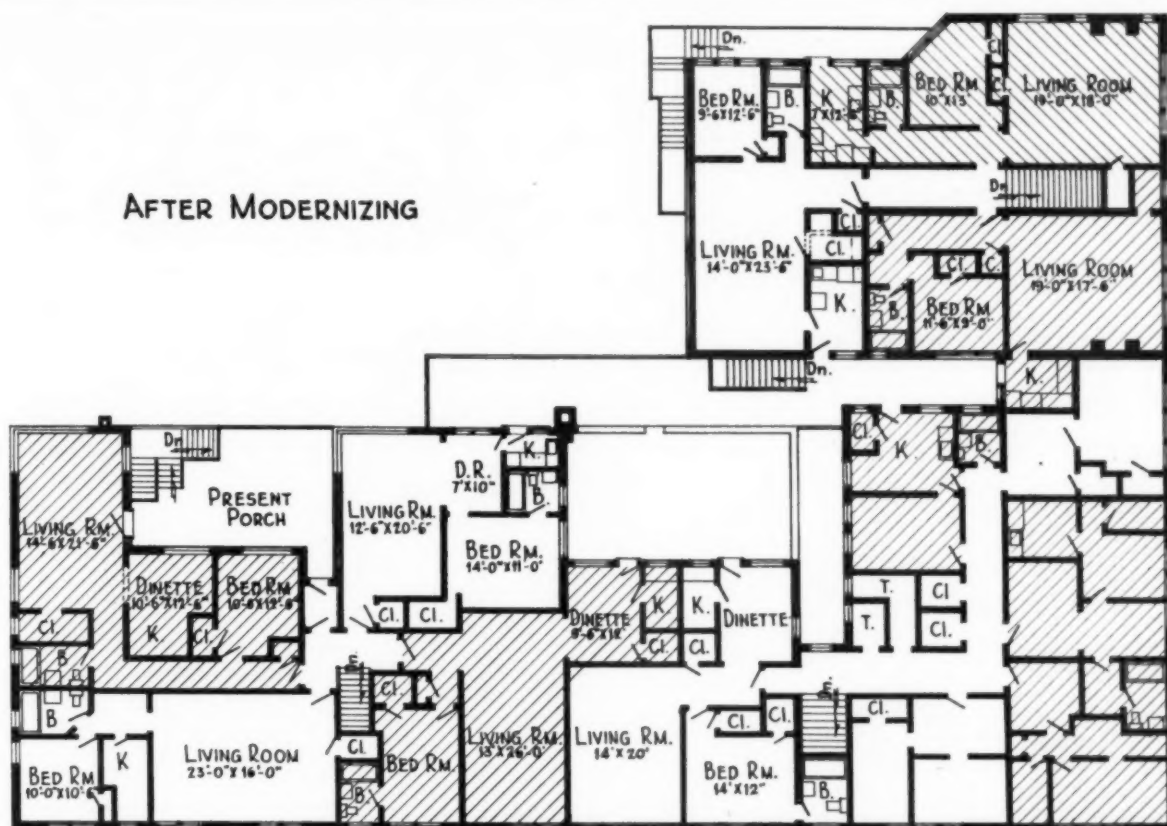
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"BEFORE AND AFTER" second floor plans of suburban apartment modernization described in this article, page 102.

Manhasset Modernizes

"Pseudo Old English" Stores in Residential Center Rebuilt in Modern Style with Structural Glass Front



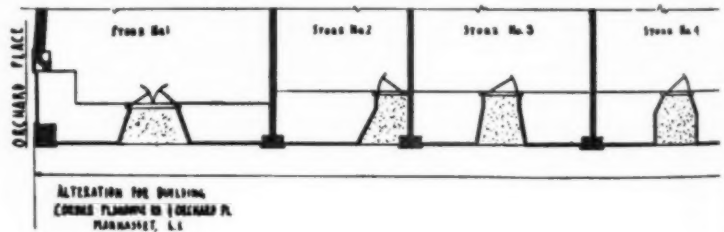
BEFORE MODERNIZING

THE thriving Long Island town of Manhasset has adopted "business-getting architectural harmony" to rejuvenate its shopping district for the trade-at-home war now in progress over the country. Eleven adjoining stores on Plandome Road, the main street, were given simultaneous "face-lifting," the better to prepare them for keen competition with neighboring communities.

The old store fronts, of a type referred to as "pseudo Old English," were removed, giving way to a one-plan block "restrained modern" in style, with all fronts composed of ivory and black Vitrolite structural glass. The transformation was so complete that no trace of the old wood and stucco fronts remains on either one-story or two-story sections of the block.

The store buildings are only ten years old and were in good condition structurally, so that no alterations of interiors were deemed necessary. Theodore M. Reihle, president of the North Shore Building Company, the building owner, decided, however, that modernization of the fronts "would be the wise thing to do as insurance that the district would maintain and improve its relative standing among nearby shopping districts."

Competition was increasing as to "town and location within the town." There was the possibility that another street in Manhasset might be built up and become a serious rival. The towns of Great Neck and Port



Washington are only a few minutes away by automobile and offer town-versus-town competition.

"We were not aiming for immediate financial advantage, since the stores already were rented," Mr. Reihle said, "but we feel confident that the improvements ultimately will improve the income. Quite naturally, our tenants are immensely pleased with the improved appearance and customer-appeal of their store fronts, which is a considerable source of satisfaction to the owners."

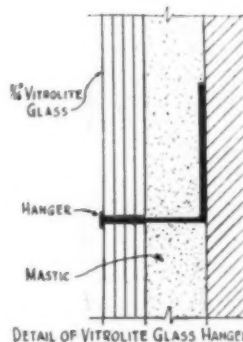
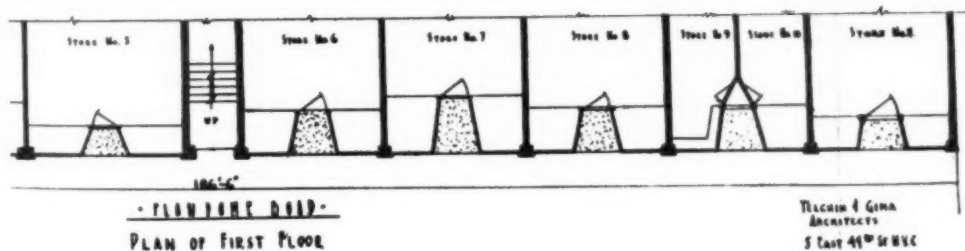
Structural glass was selected as the facing material for the Manhasset modernization project because of the saving in maintenance costs and because glass has the property of "eternal newness," he said.

Due to careful planning and close co-operation between contractors and the architect, no store lost even an hour's business during alterations, Mr. Reihle said. In fact, the stores reported that business increased during the face-lifting because of promotional advertising. The old fronts were removed on a prearranged

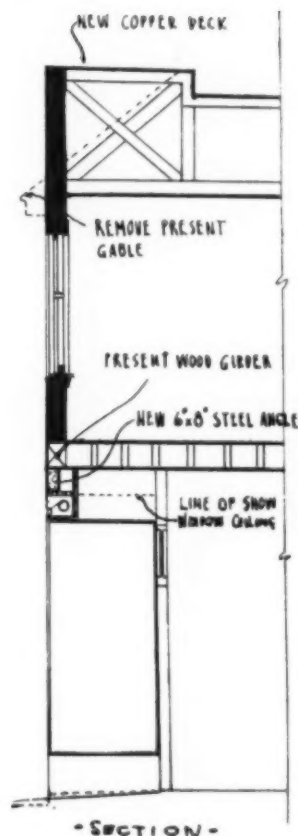


AFTER MODERNIZING

Business-Getting Architectural Harmony Adopted as Theme of Modernizing Project in which 11 Adjoining Stores on Same Street Are Given a Face Lifting.



PLAN, SECTION, and hanger details show how store front modernizing was accomplished without loss of time to the tenants.



date and the Vitrolite fronts were installed the following day.

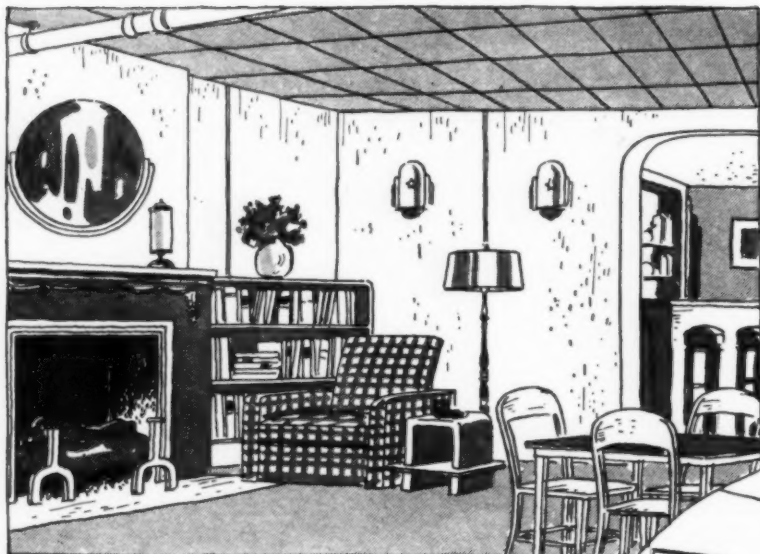
Regulations to maintain "business-getting harmony" in other respects in the modernized block were drawn up by Mr. Reihle. The only exterior signs allowed are lettering, all in one color, on the structural glass. Neon signs are permitted, but only inside the plate glass windows. All awnings must be identical.

The new combination of units was designed by Telchin and Gina, New York architects. The general contractor was Ernest G. Blaich Company of Manhasset, and the glass contract was handled by the Abbot Glass Company of New York, distributors for the Libbey-Owens-Ford Glass Company.

Architect Charles S. Telchin described the Manhasset project as a "good example of what can be done in an efficient, economical manner to increase the appeal of a shopping district through the use of modern store facing materials."

Eight Practical, Salable Suggestions Fo

Presenting Worthwhile Ideas Which Will Appeal
to the Entire Family and Its Varied Interests



← **Social Room**... Such a room is ideal for small parties or to use for overflow of larger ones. And for a stag party of a few friends there is nothing like a room apart where you can make all the noise you like without disturbing the family. Built-in fireplace and bookcases, as shown in the illustration at the left, are a worthwhile feature.

Hobby Room... Whether your hobby is stamps, ship models, photography, or any of the fascinating fields so popular today, it's great to have a special room to work in.



← **Den**... If you like to be alone while you're reading, studying or doing work that has to be done at home... here's the solution. And you can have every detail just the way you want it to be.

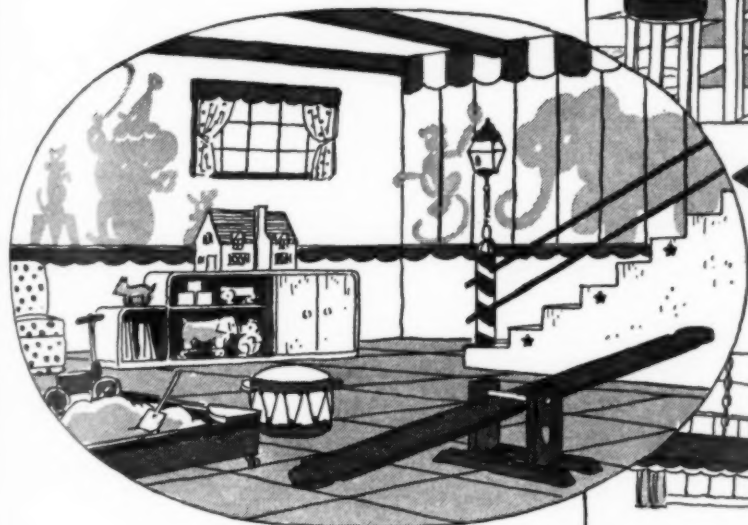
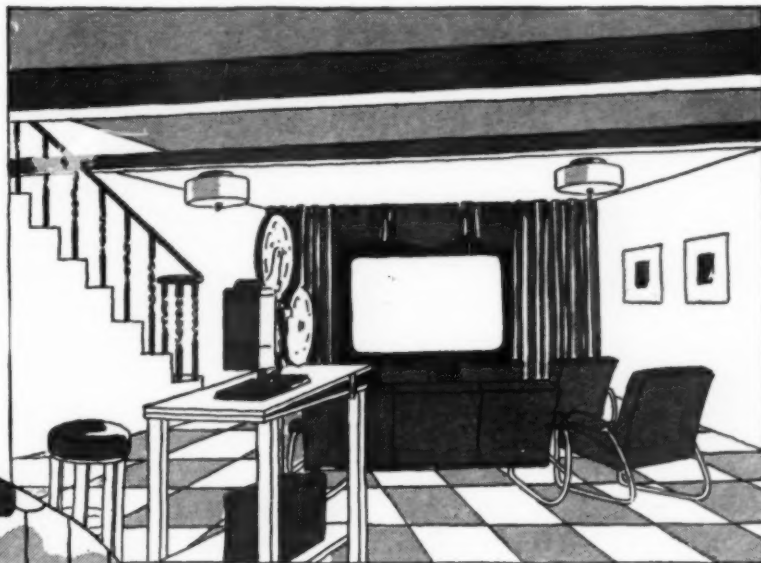
Music Room... There are so many things you can have in a music room that are impractical in a living room... cabinets for music... a place to keep musical instruments and supplies. And what a comfort if there's a son or daughter who feels the urge to practice when you'd rather have the music a little farther away.



For the Modernization of Basements

These Basement Rooms Can Be Planned as Part of New Homes as Well as Built into Old Ones

Home Movie Theatre. . . . If you've had to fuss with a movie screen and set up and adjust a projector every time you want to show a movie or colored slides, you will want to think about this special room with the screen permanently in place and the projector all focused and ready to go any time you want to put on a show for your family or friends.



← **Children's Play Room** . . . No more cluttering up of living room floors with dolls, play houses, electric trains and the like. More fun for the children, too, in the basement.

Game Room . . . You'll spend many a pleasant evening at shuffle-board, ping pong, or any of the many games you can enjoy in a room that's built for these recreations.



← **Cape Cod Tap Room** . . . To those who do a considerable amount of entertaining, such a room is a constant source of satisfaction. With a fireplace, built-in fireside seat, and a cupboard and bar, the room can be beautifully done around the central idea. It is suggested as one of the many rooms you can work out for your own basement.

Permanent Color in the Kitchen and Bath

By F. P. HUNSICKER

THE KITCHEN and bath in the home are assuming increasing importance from the standpoint of decoration as well as convenience. The modern housewife is making these two rooms the show-places of the home with the aid of up-to-date appliances and materials. To accomplish this, colors in striking contrast or intimate blends are employed.

That our surroundings have a definite bearing on our state of mind and health has been proved beyond doubt. Gaiety and laughter in any home are encouraged by cheerful color, and the restfulness which seems to radiate from a well planned room is closely related to the color scheme.

The advent of plastics into the field of building materials has done much to ease the task of brightening up the home. Materials are sought by designers in which color is an inherent characteristic. In plastics, colors or designs are literally molded into sheets or objects, and permanent finishes are obtained in the molding processes. Woods or marbles—patterns of almost any design—may be simulated, and solid colors from the lightest tints to the darkest shades are obtainable. Inlays can be obtained which still further enhance the beauty of design, or various colors can be molded into one panel, to obtain

striking effects. One of the later developments is the use of actual wood as a surface sheet of the molded panel. Rare and costly woods are thus obtainable in plastics, retaining the original beauty and warmth of the wood, but processed into a modern material.

For wall surfaces the laminated plastics are most adaptable. These are made by hot molding many sheets of paper together which have been impregnated with a synthetic thermo-setting resin. Tremendous pressures and temperatures are used, producing plates hard and dense. The color or design is incorporated in the materials themselves before molding, and beautiful gloss or satin finishes are produced in the molding process.

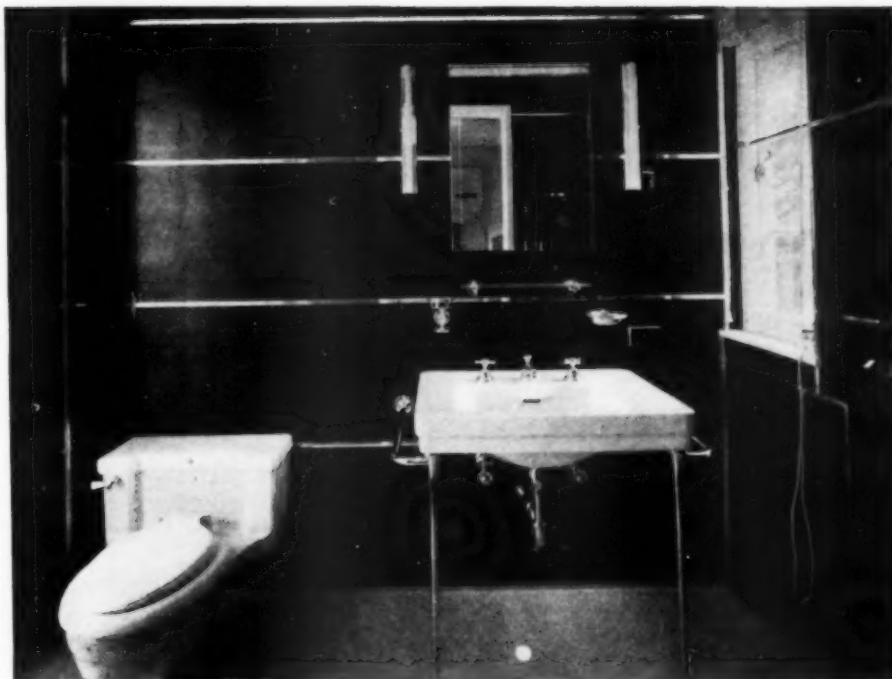
In illustration below, bisque and blue "Micarta" walls enliven and beautify a kitchen in a home at Rockville Center, Long Island. Sheets $9/32$ " thick were used for these walls. The Micarta surface is molded to a Presdwood core to produce light-weight sheets easily handled and fabricated on the job. Sheets can be obtained 48" wide by 96" long, which is an economical size.

The wall was prepared for the Micarta by first nailing $3/8$ " thick plywood to the studding to produce a smooth, solid backing. The sheets were applied directly to this wall as shown in drawing below. A mastic was applied to back of the sheets and to the wall. This adhesive holds the Micarta in place, but additional support is



THE walls and work surfaces of this streamlined kitchen and breakfast nook are beautified with chrome decorated, colored Micarta.

THE modern bathroom shown at right has a wall finish of plastic paneling trimmed with stainless steel moldings over panel joints.



obtained from the molding track screwed into the studding at the joints between the sheets. They were cut so that $\frac{1}{8}$ " clearance was left between the edges of the sheets and the molding track to allow for expansion. A stainless steel molding was then snapped onto the track to cover the screw heads and joints.

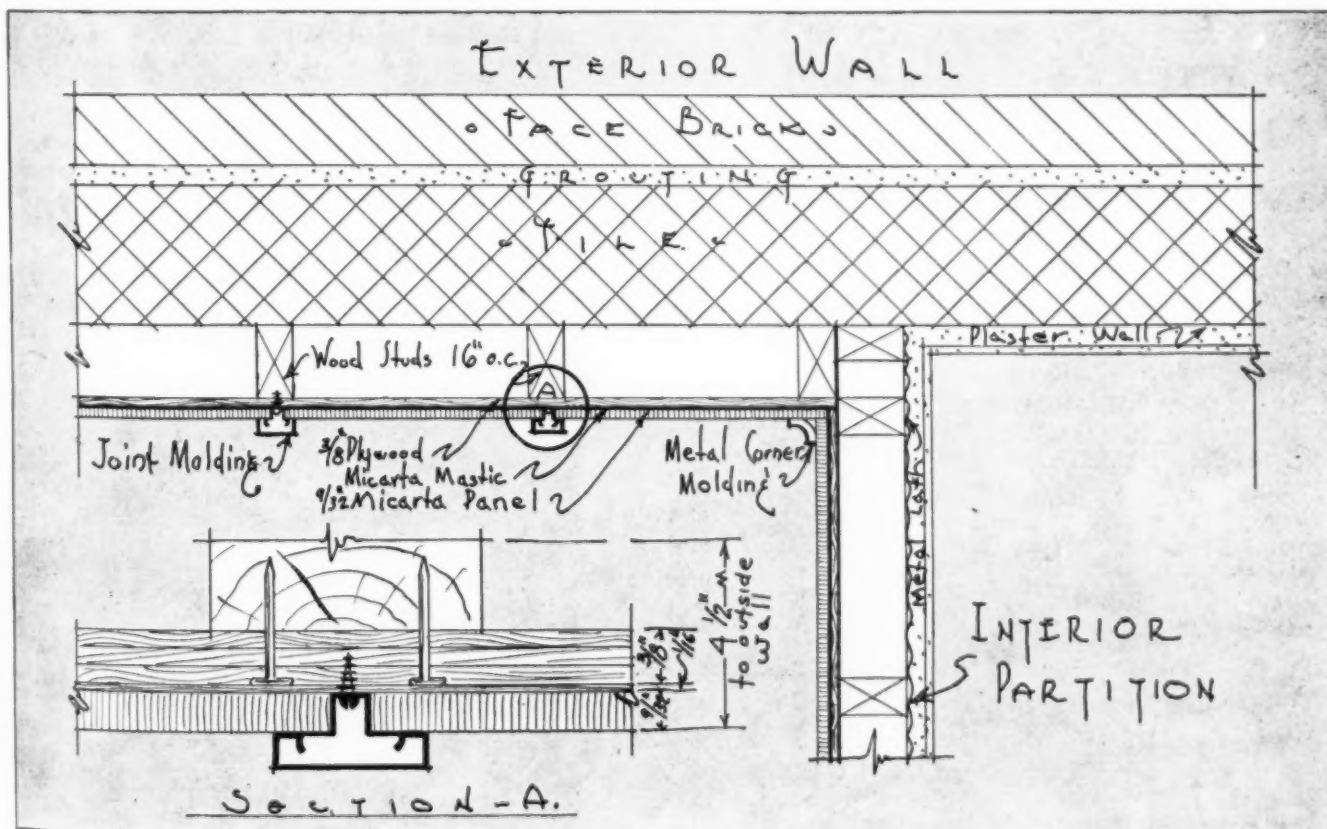
In this kitchen blue Micarta is used for a 48" high wainscot, and bisque is the color used above this to the ceiling. A flat stainless steel molding is used to cover the joint between the blue and bisque sheets.

This same material is also used for the work surface between the sink and the range. The work tops employ $\frac{1}{16}$ " thick Micarta veneered to smooth grained plywood on top and edges. Its wear resistant and easily cleaned

surface makes an ideal working surface obtainable in many colors and designs.

Above, the bath has a wall treatment similar to the kitchen. Black Micarta is used with stainless steel moldings at joints to create a very pleasing effect.

As a wall covering in kitchens or bathrooms, this material is outstanding for reasons which are obvious from the physical properties of the material. Because of density and non-porosity, it is impervious to moisture, resistant to fire and exceptionally easy to clean with a damp cloth.



THE drawing above shows recommended practice for installing this wall finish; in detail, metal molding over joints.

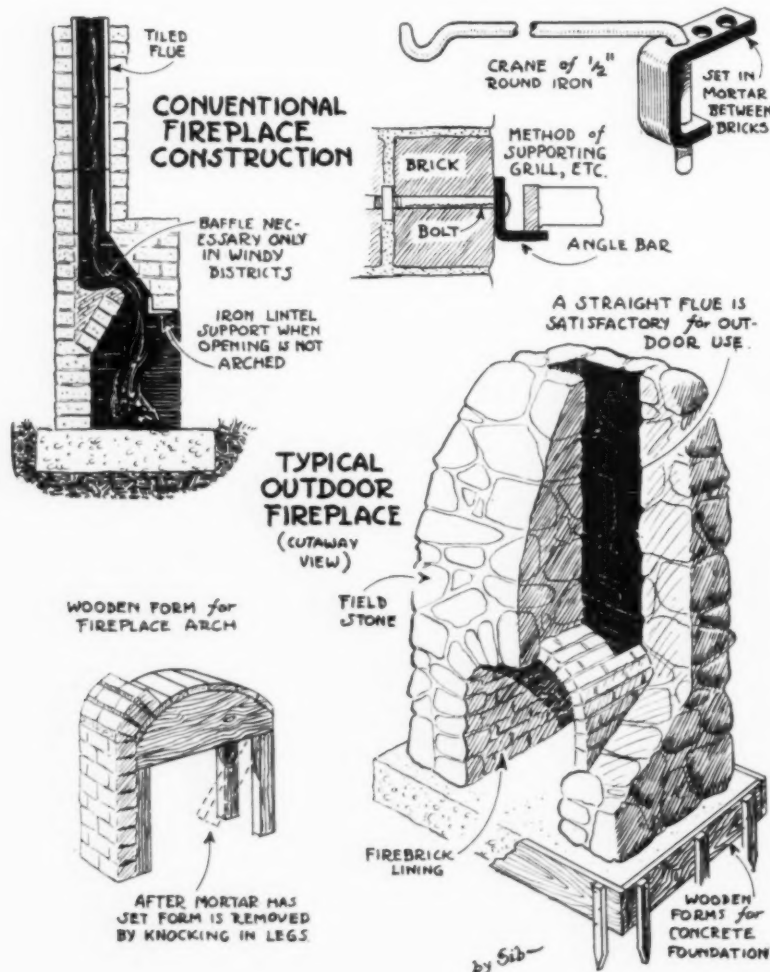


Outdoor Grilles and Barbecue Fireplaces

THE increasing popularity of outdoor living has made outdoor fireplaces and barbecues a part of many California homes. This feature is now being widely adopted in all sections of the country as an appreciated addition to outside recreation at home. The *front cover* this month pictures just such a fireplace on a terrace

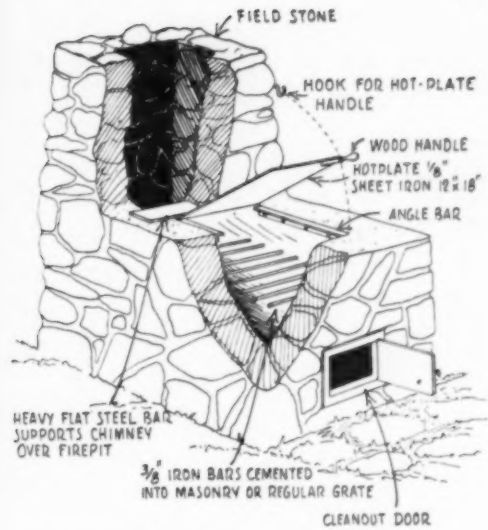
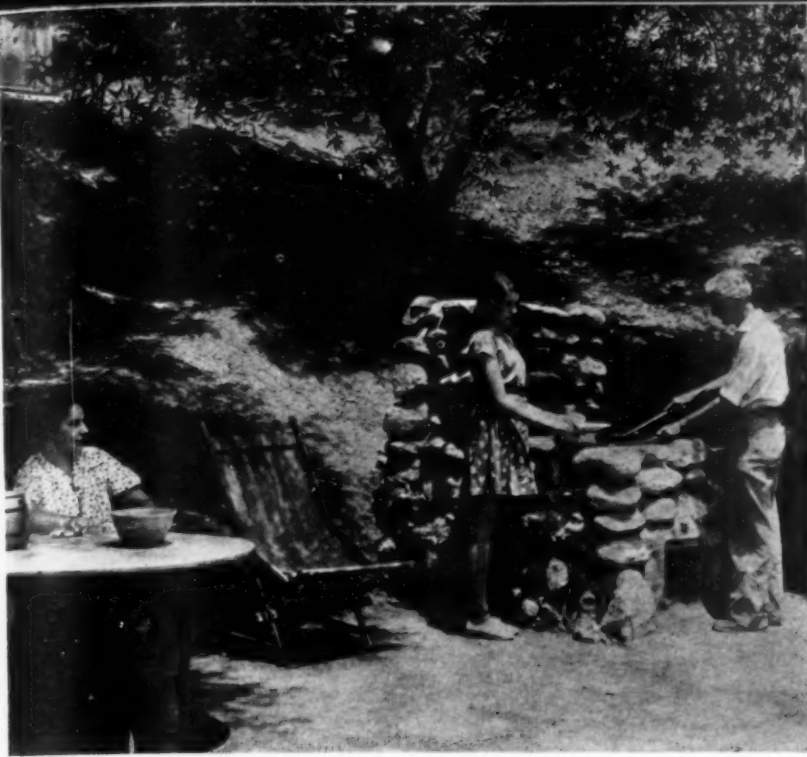
adjacent to the house; other types are also shown here. Parts can be purchased from equipment manufacturers.

Entertaining outside is easier because fewer dishes are needed and there is no crowding of the guests. Beyond this, there seems to be a basic urge in all of us to eat outdoors once in a while as food is more appetizing.



THE CONSTRUCTION DRAWINGS at the left give details for building fireplaces similar to those shown on the front cover and on these pages. The cut-away view indicates firebrick lining and concrete base structure. A 9-foot chimney provides excellent draft and carries away the smoke satisfactorily; note that flue lining is unnecessary, and that smoke shelf can be omitted, a straight flue being all that is required for outdoor fireplaces. Outdoor cooking in this type of fireplace is done on a grille having legs, or by a kettle on a crane, as detailed in the upper right of drawing at left.





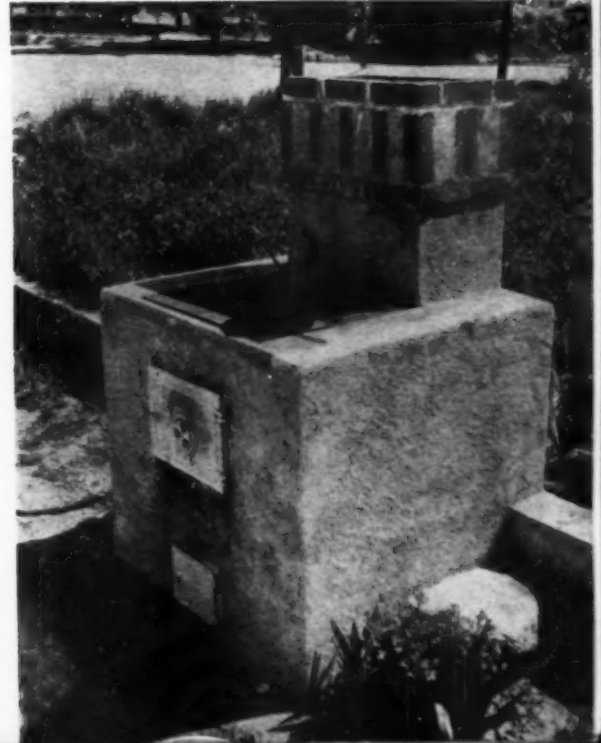
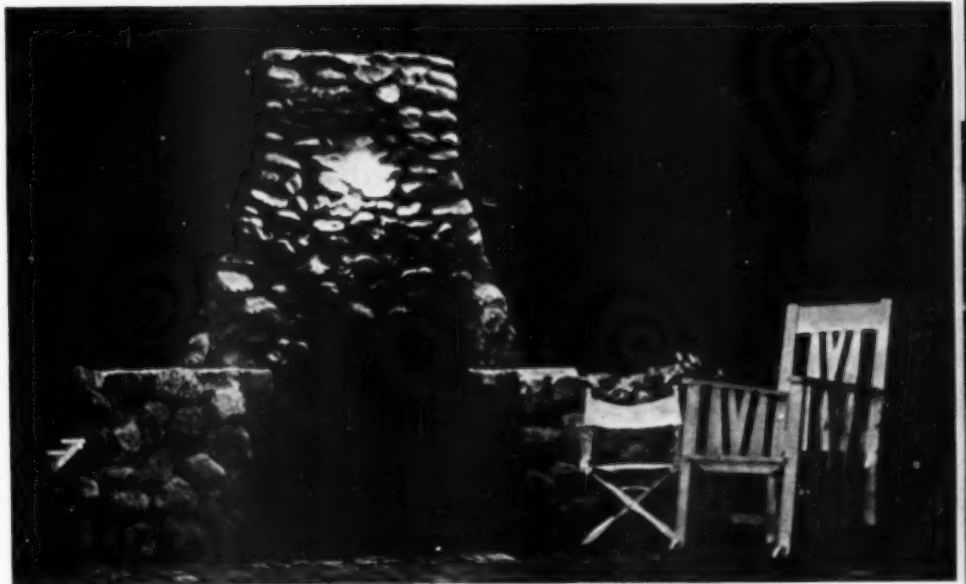
TYPICAL BARBECUE FIREPLACE

ABOVE: Construction details for barbecue fireplace; note steel bar over firepit at chimney.

ABOVE ON OPPOSITE PAGE is an open fireplace of fieldstone with a separate barbecue at one end so that it is not necessary to stand before a hot fire when cooking an outside meal. The other wing provided with a cover serves as a wood box to keep fuel dry.

DIRECTLY ABOVE is one of the simplest types of barbecue fireplaces. It is built of large fieldstone and need not be lined with firebrick. A hot plate can be lifted to put a grille directly over the coals for broiling.

AT RIGHT, night view of a more pretentious type of barbecue fireplace; it is one of the most complete in Southern California, being gas-fired with pipes for individual gas appliances. It will cook for as many as forty guests at one time. At the right, below, a combination incinerator and barbecue is shown; this is of all concrete construction except for the brick chimney trim. Directly below and on the opposite page, terrace and adjoining porch fireplaces are illustrated.



How to Estimate Accurately

In This Article of a Series on Estimating, Ceilings, Roofs and Stairs Are Discussed

By J. DOUGLAS WILSON

Head, Building Trades Dept., Wiggins Trade School, Los Angeles, Calif.

THE SIX framing units into which a house can be divided are underpinning, floors, walls, ceiling, roof and stairs. The first three have been treated in preceding articles. Ceilings, roofs and stairs will now be discussed.

Ceiling Unit

The ceiling unit divides itself into three parts: ceiling joists, stiffeners or strongbacks, and backing.

CEILING JOISTS: Ceiling joists are placed horizontally, resting on top of the walls and partitions and forming the framework of the ceiling. See Fig. 1. The direction in which they run is based on the shape of the roof, as ceiling joists act as a tie to keep the building from spreading. It is an advantage to have them run the short way of a room so as to decrease the span, making the joist less likely to sag. For all plastered interiors the joists are spaced 16" on centers. (o.c.)

Rule: Multiply the length of the supporting wall or partition by $\frac{3}{4}$; then add 1. Length of joist equals distance between the two opposite walls or partitions plus at least 8" to provide a good bearing. Then convert to a standard length of lumber.

BACKING: Backing is needed on the top plate of all partitions that run parallel to the ceiling joists. These are called cross partitions. Extra ceiling joists are used for the backing. See Fig. 1. The length of the backing is determined by the length of the partition.

Rule: Allow two extra ceiling joists for each cross par-

tion. Scale length of partition; then add at least 8" to provide a bearing for each end of the joist. Convert to a standard length of lumber.

STIFFENERS: A stiffener, or strongback, is a piece of framing lumber nailed at right angles to and on top of ceiling joists. It is placed at the center of the span to stiffen the joist. See Fig. 2. Ordinary sized rooms will require one piece; larger rooms may require two pieces. The plan specifications and building ordinances are the governing factors. The length of a stiffener is determined by the room dimensions.

Rule: Allow one piece for each main room of the house, and one extra piece for each large room. The length or width dimension of the room plus at least 8" equals the length of the piece. Convert to a standard length of lumber.

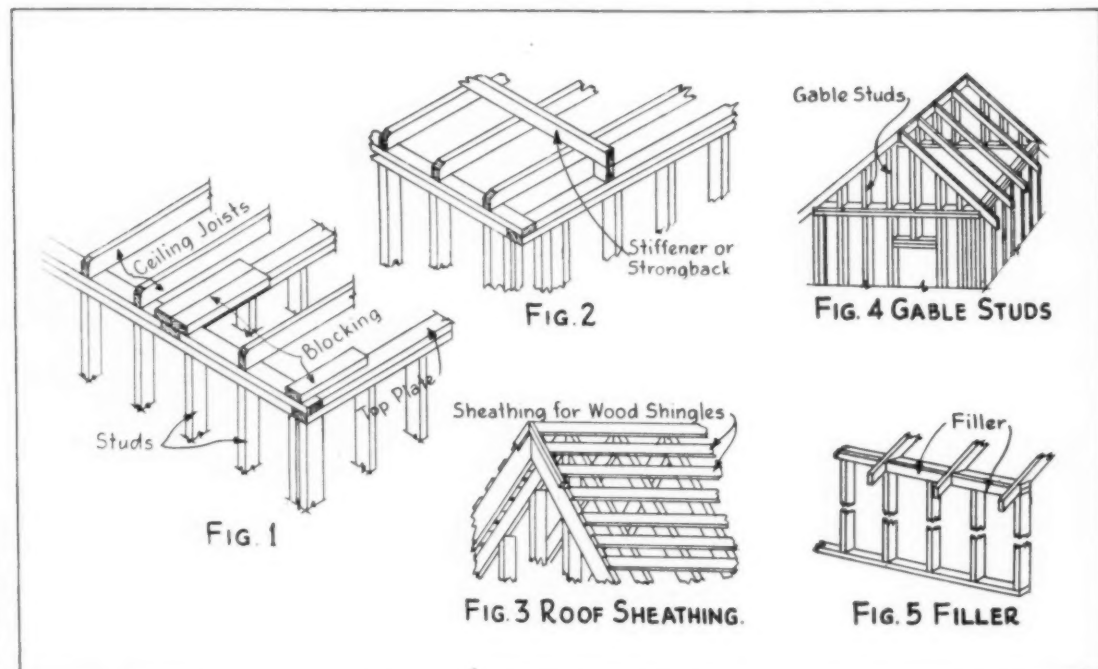
Roof Unit

The framing members of a roof are rafters, ridge, sheathing, gable studs, braces and filler.

Rafters are pieces of lumber framed to form the slope or pitch of the roof, the number and length varying with the shape and pitch of the roof.

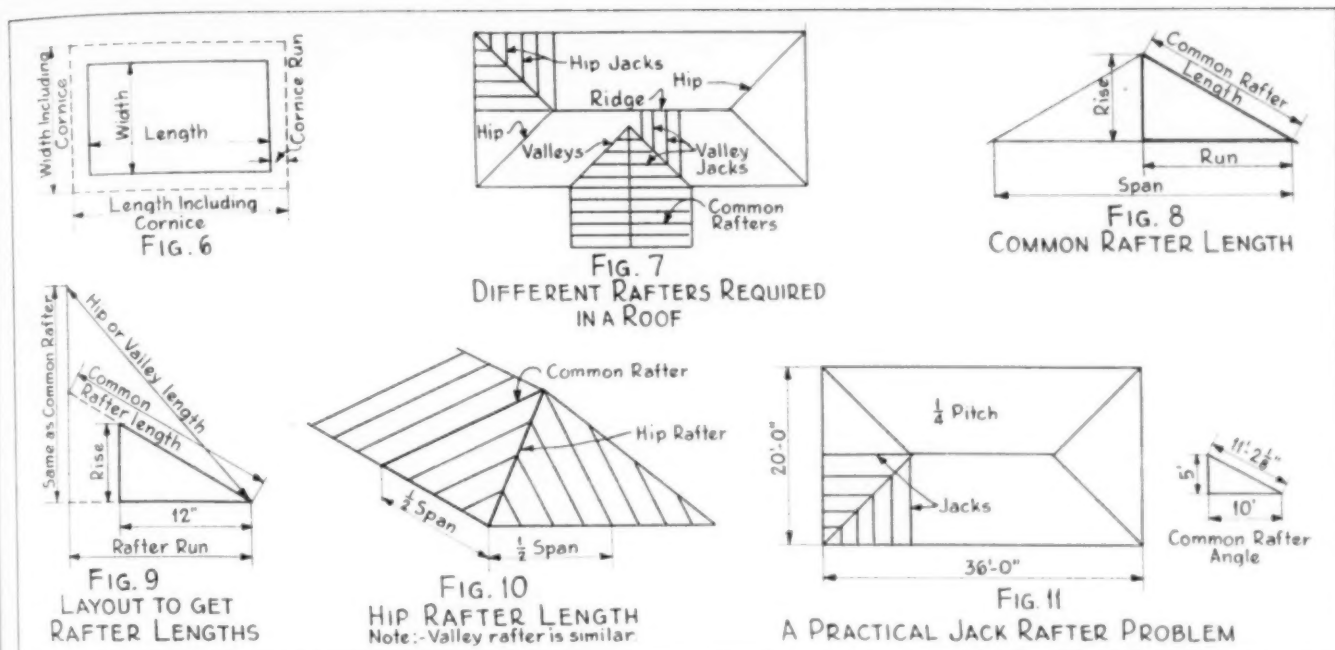
The lengths of the different rafters can be figured mathematically, graphically, scaled on the blueprint, or by using the carpenter's steel square. The estimator rarely uses the square, while the carpenter on the job uses this tool almost entirely.

Sheathing is material placed at right angles to and on top of the rafters to form a surface for the roofing materials. See Fig. 3. The ridge board is used at the top end of the rafters to form a continuous tie while the roof is being raised. Braces, which vary in number and length according to the slope and span of the roof, are placed under the rafters to stiffen them. Gable studs are used to construct the wall framework formed by a pair of rafters



RIGHT: Figures 1 to 5 indicate construction of backing, stiffeners, roof sheathing, gable studs and fillers, as covered in the text.

ON OPPOSITE PAGE: Finding roof area, kinds of rafters, rafter lengths and layouts, hip rafter lengths and figuring jack rafters are shown in Figures 6 to 11.



placed at the end of a building. See Fig. 4. The filler is framing lumber placed at the plate line between each rafter to close the space between the top plate and the sheathing. See Fig. 5.

TYPES OF ROOFS: The shed roof is the simplest type, the slant being in one direction only. The gable roof has the slant in two opposite directions. The hip roof slants in four directions, while the intersecting roof is a combination of these types and is needed for a building which has an L or offset.

WHAT PITCH IS: Pitch is the term used to denote the mathematical relationship between the slope and span of the roof. Its use enables the architect to quickly indicate what the ridge height is to be above the plate line. For a building 32' wide with a 1/4 pitch roof, the ridge is 8' above the plate. A half pitch roof with a span of 40' would have the ridge 20' above the plate. Pitch times span will always give ridge height. (For a detailed description of the mathematical principles of a roof and how to lay out the different rafters, see Wilson and Werner's *Simplified Roof Framing*.)

MATHEMATICAL RELATIONSHIP BETWEEN FLOOR AND ROOF AREAS: There is a definite mathematical relationship between the floor and roof area of a building, this relationship varying with the pitch; also for each pitch involved the common rafter length is mathematically a certain amount longer than the span over which it passes. An estimator's take-off problems are greatly simplified by using a series of constants to find roof areas or common rafter lengths.

Rule: To use this mathematical principle, multiply the floor area by the constant for the required pitch and the result will be the roof area. If a common rafter length is involved multiply the roof span by the constant and divide result by 2. The answer will be the common rafter length.

If a building has a cornice, increase building dimen-

sions by twice the cornice run, then multiply to get plan area of the roof. Plan area times constant equals roof pitch area. See Fig. 6.

KINDS OF RAFTERS: There are four common types of rafters to be listed by an estimator when taking off a bill of materials for a roof. The most common is the common rafter, hence its name. This rafter is required for all types of roofs. Hip rafters form the framework at the corner or hip of a hipped roof. Valley rafters are used at the 90 degree intersection of the two (or more) parts of an intersecting roof. Jack rafters are required when hip or valley rafters are used. See Fig. 7.

How to Find the Length of a Common Rafter

The length of any rafter is, mathematically, the hypotenuse of a right angle triangle. For the common rafter 1/2 the span run is the base of the triangle and the roof rise is the altitude. See Fig. 8. The estimator's problem is to find the length of the hypotenuse of this angle. This can be done in several ways. The simplest method is to use an architect's scale and read the length of the rafter on the blueprint. This method can only be used for the common rafter.

A second way is to use a table and multiply the rafter run by a constant given for a definite pitch. See Table I on this page.

A third method which can also be used for the hip and valley rafter is to graphically develop the length. This can be done simply and quickly as follows:

a. Use the square corner of a drawing board and lay off a right angle, using the cut of the roof as rise and run. Then draw in the hypotenuse. This will establish the correct slope of the roof.

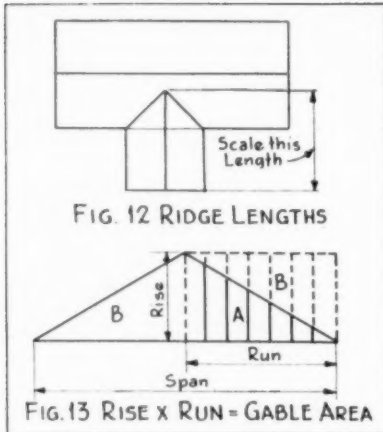
b. Extend the 12" run line to equal 1/2 the span distance run. If 1/2 the span is less than 12", then mark on the 12" line the correct distance. When doing this part of the development the scale automatically becomes 1" to the foot.

c. Extend a new rise line at the point located in step b. The length of this new rise line immediately becomes the roof rise measurement, on a 1" to a foot scale.

d. Read the length of the hypotenuse from the new rise line. This will be the common rafter length. See Fig. 9 above.

(Continued to page 74)

Pitch	Cut	Constant	Pitch	Cut	Constant
1/8	3 & 12	1.03	5/12	10 & 12	1.3
1/6	4 & 12	1.054	1/2	12 & 12	1.41
5/24	5 & 12	1.083	7/12	14 & 12	1.53
1/4	6 & 12	1.11	3/4	15 & 12	1.6
7/24	7 & 12	1.15	2/3	16 & 12	1.66
1/3	8 & 12	1.2	3/4	18 & 12	1.8
3/8	9 & 12	1.25	3/4	21 & 12	2.015



FINDING roof ridge lengths and the number and length of gable studs is diagrammed in Figures 12 and 13.

If a cornice is to be considered add the cornice run to $\frac{1}{2}$ the span distance and then repeat as above.

TO FIND NUMBER OF COMMON RAFTERS: To find number of pieces of lumber to make the common rafters, multiply plate length on which the rafters are to be nailed by the spacing of the rafters; then add one. This gives the number for one side of a gable roof. Double the result for the other side.

HOW TO FIND THE LENGTH OF THE HIP OR VALLEY RAFTERS: To find the length of the hip or valley rafter continue the graphic layout described above. The length of a hip or valley rafter is *always* the hypotenuse of an angle formed by the common rafter length and $\frac{1}{2}$ the span. See Fig. 10. Therefore, as $\frac{1}{2}$ the span distance is already laid out, simply extend the rise line until it represents the length of the common rafter. Then draw a hypotenuse line from this point, as illustrated in Fig. 11. The length of this line equals the hip or valley rafter.

The length of a hip or valley rafter can also be found mathematically by multiplying the span by a constant which is different for each pitch. These constants are given in the following table.

Table II: Constant Table for Hip and Valley Rafter Lengths

Pitch	Cut	Constant	Pitch	Cut	Constant
$\frac{1}{8}$	3 & 12	.718	$\frac{5}{12}$	10 & 12	.821
$\frac{1}{6}$	4 & 12	.726	$\frac{1}{2}$	12 & 12	.866
$\frac{5}{24}$	5 & 12	.737	$\frac{7}{12}$	14 & 12	.916
$\frac{1}{4}$	6 & 12	.751	$\frac{5}{8}$	15 & 12	.943
$\frac{7}{24}$	7 & 12	.765	$\frac{2}{3}$	16 & 12	.971
$\frac{1}{3}$	8 & 12	.782	$\frac{3}{4}$	18 & 12	1.03
$\frac{3}{8}$	9 & 12	.80	$\frac{7}{8}$	21 & 12	1.125

Rule:—Span X constant equals length of hip or valley rafter.

NUMBER OF HIP OR VALLEY RAFTERS: Number of pieces: Allow one piece of lumber for each hip and one piece for each valley in the roof. The size of stock will vary. Hips and valleys are usually 2" wider than the common rafter stock.

HOW TO FIND THE LENGTH OF HIP OR VALLEY JACK RAFTERS: A hip roof has exactly the same area as a gable roof (assuming the building dimensions and rafter pitch are the same). The number of pieces of rafter stock to make the jacks will be the same as if common rafters were ordered. Hips and valleys will have to be estimated separately. Therefore, figure a *hip roof as though it were a gable roof*. If the roof is an intersecting one, figure the main roof as though it were a gable roof; repeat for the smaller roof; in other words, figure each wing separately. Order pieces of common rafter stock which will cut up into jacks without waste if the carpenter is careful. The waste off of the longest jack will be long enough for the shortest jack, etc. For a roof with a cornice, add two pieces to allow for the overhang stock.

To illustrate: List the jack rafters for the hip roof shown in Fig. 11. Pitch is $\frac{1}{4}$. Common rafter spacing is 24" on centers.

Solution: The length of the common rafter for this roof is the diagonal of $\frac{1}{2}$ the span (10') and the ridge height (5'). This is 11' $2\frac{1}{8}$ ", requiring a 12' piece of lumber.

NUMBER OF RAFTERS: $36 \times \frac{1}{2}$ (24" o.c.) equals 18; 18 plus 1 equals 19 rafters for one side or 38 pieces for both sides. Therefore order 38 pieces 2 x 4—12', which will be sufficient to make all common and jack rafters in the roof. In addition, there will have to be 4 pieces of stock to make the hips. The length of these will be 20' (span) x .751 (see hip constant Table II), or 15.02 and called 16'—0".

Summary of Rafter Estimating Problems

To review the preceding steps:

1. Pitch times span equals total rise.
2. Diagonal of $\frac{1}{2}$ the span and the total rise equals common rafter length.
3. Diagonal of $\frac{1}{2}$ the span and the common rafter length equals the length of the hip or valley.
4. Jack rafters are figured as though the roof were a gable type.

ROOF SHEATHING: The amount of roof sheathing required depends on the kind of roofing material specified. If composition sheathing is used the sheathing problem is identical with the sub-floor estimating rules as 1" x 6" stock SISIE is most generally used. Occasionally the specifications call for it to be laid diagonally. On most residential work the sheathing is laid straight.

Rule: To find the board feet of sheathing stock:

a. Figure the plan area of the roof. If there is a cornice, add cornice dimensions to the building dimensions. The plan area is found by multiplying the width and length dimensions together and subtracting the "take-away" areas. (See Fig. 2 in previous article in June, 1939 issue of *American Builder*.)

b. Multiply the plan area of the roof by the constant given for the required pitch in Table I.

c. Add to this roof or pitch area the following amounts which are based on the way the material is laid and the milling:

Table III: Constant Table for Solid Roof Sheathing

Size of Stock	1 x 6		1 x 6 SISIE to 5 1/2"	
How laid	Straight	Diagonal	Straight	Diagonal
Constant	1.10	1.16	1.2	1.3

Rule: Area times constant equals board feet.

If wood shingles are specified, proceed as above and find the pitch area. If 4" sheathing is used laid 8" or 9" on center, multiply roof area by $\frac{1}{2}$; then add 5%. If 6" sheathing, multiply by $\frac{2}{3}$; then add 5%.

ROOF RIDGE: The length of a ridge can be determined on the blueprint by using a scale rule and reading the length as drawn on the elevation sheet or roof plan.

Rule: If the building has a gable roof the length of the ridge equals either the width or length dimensions of the building. If the building has a hip roof the ridge length equals the difference between the width and length measurements. If the building has an intersecting roof the length should be scaled on the blueprint. See Fig. 12.

GABLE STUDS: Gable studs are usually spaced 16" o.c. and placed, if possible, directly over the wall studs.

Rule: To find the number of studs multiply one-half the span distance by $\frac{3}{4}$. The length of all the studs is figured the same as the ridge height above the plate line. Figuring one-half the area will give sufficient stock for the whole gable. See Fig. 13.

BRACES: Brace stock for a roof is difficult to estimate.

(Continued to page 104)

Venwood Wallpaper for Wood Panelling Effects

GENUINE wood panelling always has been considered a luxury, limited to fine homes where cost is of secondary importance and to public buildings where permanence and beauty are the objectives. So, a considerable demand has developed for some substitute involving a smaller investment and a more short-term commitment decorative scheme. Wallpaper reproductions have been tried but have failed to satisfy, largely because of the "repeat" nature of the product, which lacked the variety of grain and tone that is apparent in real wood.

Venwood wallpaper, however, a relatively new product manufactured by the Schmitz-Horning Company of Cleveland, is a line of exact reproductions of selected woods—exact not only as to grain, but also as to shades and finishes of popular varieties. They thus meet the requirements of almost any conceivable type of interior. The line already includes knotted pine, gumwood, walnut, mahogany, wood block and herringbone (the last two reproducing inlaid effects), and range in finish from natural and bleached tones through the medium finishes to mahogany and dark walnut.

The fact that this paper presents such a genuine appearance on the wall and can be distinguished from real wood only by the closest examination is due to several reasons. Of first importance are the large, veneer-like sections in which it is produced, size 40 x 80 inches. The very fact that it is produced in sections suggests a random use, cutting into board widths, building of base and panel effects, reversing alternate sheets, etc., rather than just hanging from floor to ceiling as is usual in the case of ordinary roll wallpaper. Second, these wood-effect papers have a slight play, or variation, in color around knot formations or from one part of the grain to another. This is noticeable in real wood and yet not usually found in reproductions. And third,

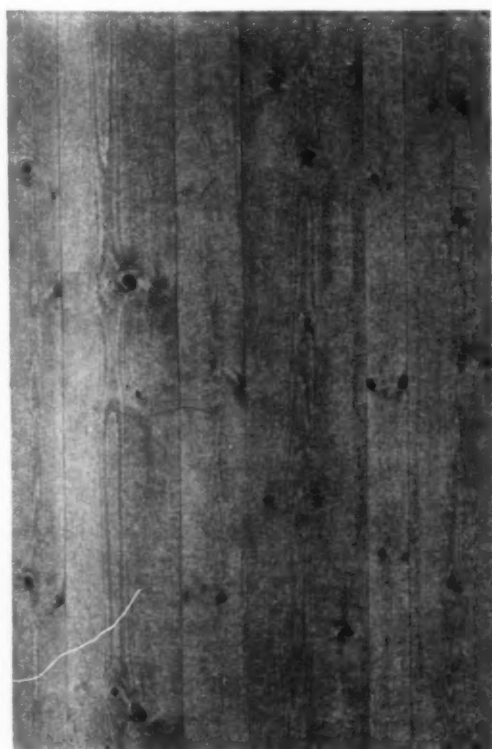


WALNUT panelling in office of F. H. Thompson, vice president, Simmons-Boardman Publishing Corporation, Terminal Tower, Cleveland.

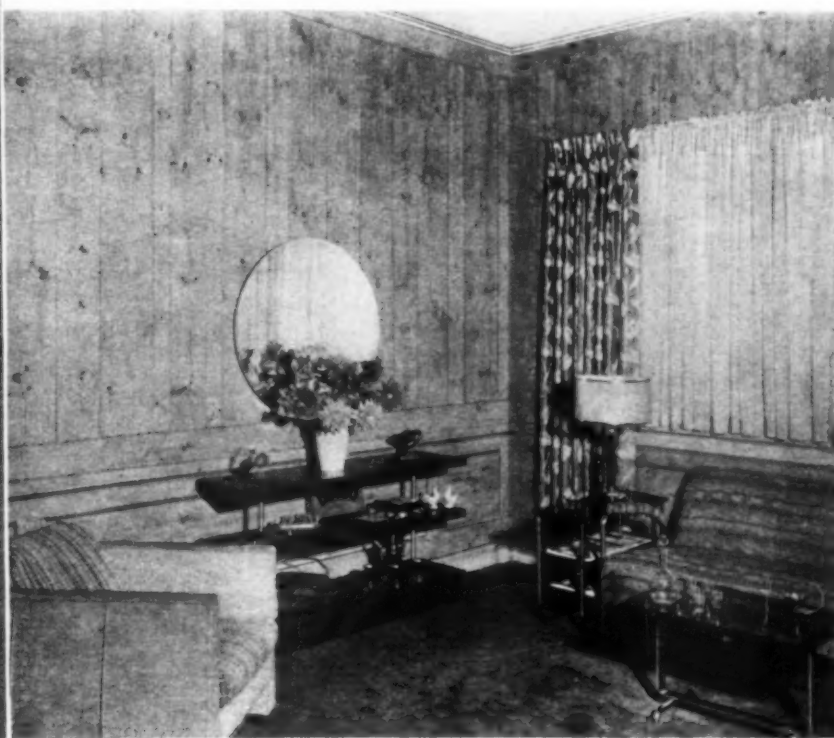
the finishes are excellent, in most cases an eggshell or waxlike luster over which additional coats of wax or varnish may be applied if desired. In the case of the knotted pine, however, parts of the grain have more gloss than other parts, as is typical of natural finishes.

Any competent wallpaper hanger should do a good job of hanging this product. As it does not come in continuous lengths, a little more time is required than for roll paper. An ordinary degree of judgment in arranging the build-up is required. The very reasonable retail cost of Venwood wallpaper—\$1.50 per section 40 x 80 inches—combined with the low cost of installation, serve to make this a surprisingly inexpensive proposition considering the rich effects obtained.

In both new and old homes Venwood offers a unique opportunity to obtain truly fine wood interiors at a cost well within the average means.



DETAIL of pine panelling.



HOME living room, finished with Venwood knotted pine paper.

New Products and Improved Materials

New Factory-Fitted Casement Unit

ROACH & Musser Co. of Muscatine, Ia., has added a casement window to its Embassy line of factory-fitted window units. It combines weatherstripping, screen, double glazing insert and hardware all in one compact unit. Frames are suitable for any type wall. In keeping with characteristic slender-line design, the casing is 2½ inches wide with narrow transom bar and mullion (1½

inches inside). Sash are 1½ inches thick, rabbeted to keep out the weather. Division bars are the clean-easy oval type.

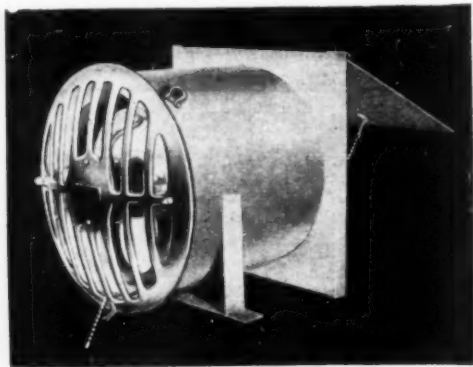
Double glazing insert consists of aluminum frame glazed with "A" quality labeled glass—rests snugly against cushion weatherstrip; easy to insert or remove; fits rabbet in sash. Hinges are sturdy extension type screwed to both stiles and rails. Operator is improved type, very easy to operate.



LEFT: Operation of new factory-fitted casement window unit showing ease of cleaning.

Wall Type Kitchen Fan

THE new Type C Kitch-N-Ventor made by the Universal Blower Co., Birmingham, Mich., offers appearance, performance and reliability. Its 10-inch fan was designed by an aerodynamics expert and is made totally of aluminum for quietness and efficiency. The 2¼ inch pitch moves about 700 C.F.M. Stylish oval grille is of brightly polished solid aluminum; high quality 4-pole motor, requiring only 50 watts, 110 volts and 60 cycles, is closed against passage of greasy air and has oversized (5/16") wool-packed bearings with convenient oiling tube. Nicked chain operates the automatic motor switch and outer door which, being in constant spring tension, cannot rattle; weatherstripped with felt for long life. Model F fits frame walls 6 to 8 inches, Model B, for brick walls 9 to 13 inches. Special long thimbles are available for passing through cabinet and wall.



KITCHEN ventilating fan of wall type.

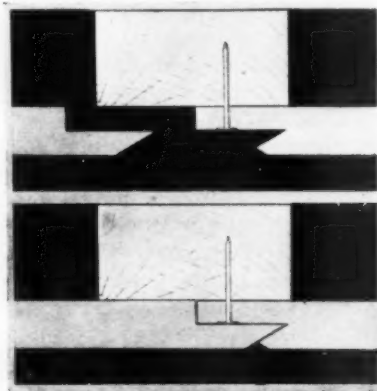
New "Lightning Joint" for J-M Board

A NEW type of insulation board edge, known as the "Lightning Joint," has been developed by the Johns-Manville Corporation for joining decorative units such as bevel plank, bevel panels and border strips. The new joint provides the important innovation of completely invisible nailing. This elimination of exposed nailing, to which architects particularly have long objected, is expected to greatly widen the market for insulating board products for interior finishing.

With the opening of the company's new plant at Jarratt, Va., several entirely new items have been added to the Johns-Manville line of board products. A new economical wall board in sheets 4' by 7', 8', 9', 10' and 12' in natural color with an ironed surface on both sides will be known as J-M Service Board. This product is designed for the low-price field, and sells at a price somewhat less than that of standard insulating board. In addition to 25/32" Weathertite Asphalt-Coated Sheathing in the standard four foot width for vertical application, a 2' x 8' size, with a V-tite joint on the long edges, has been added for horizontal application.

One of the most important features of the line of products from the new J-M plant is an improved Glazecoat surfacing. All standard building board from the new plant is coated one side with the new finish in a light Ivory color, which has a 71% light reflection coefficient according to tests by the Electrical Testing Laboratory of New York. The back or opposite side is sealed and ironed to prevent warping and provide an exceptionally smooth surface.

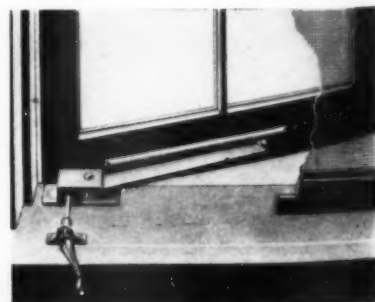
Decorative items such as Plank and Bevel Panels are available in four colors—Ivory, White, Rose Tan and Graytone. All colors were selected by Lurelle Guild, noted commercial designer and color expert. Colors are packed separately so that the consumer can make his own combination of color and design.



NEW wallboard joint with concealed nailing.

Heavy Duty Casement Window Operators

THE latest device made by H. B. Ives Co., New Haven, Conn., to operate outswinging casement windows without removing screen has been painstakingly worked out to eliminate any troubles home owners may have found with ordinary window operators. This new Ives operator is designed for heavy duty, for smooth, trouble-free operation under all conditions, and for long, satisfactory service. It comes in steel or brass in several finishes and is packed with crank handle with escutcheon finished to match, when so specified on order.



THROUGH screen, heavy duty casement window operator shown as installed.

Steel Corner Shields

A NEW corner shield has just been placed on the market by the Haskell Co. of Birmingham, Mich., for use in stair corners, as well as in the corners of drawers, linen closets and shelves. It is made of flexible steel with spring steel locking device and is installed in a few seconds simply by pushing in with the thumb. No nails, no screws, no tools are required.

Once installed, this shield should never work loose. It enables the housewife to wipe out stair corners as she wipes out her mixing bowl. The shield is finished in brown baked enamel, and takes paint.

Do as "VIKING" Did

The Viking Freight Lines at their Chicago Depot, built by Enjay Construction Company, recently had installed . . .

25

**Rō-WAY
OVERHEAD TYPE
Garage Doors**

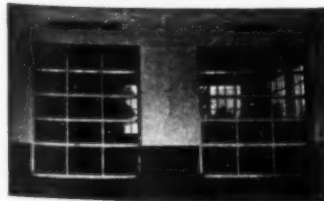
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the advantages
Rō-WAY
OVERHEAD TYPE
DOORS offer*



Popular single door for residence garage



Designed to harmonize with architecture



These give maximum visibility

See how Rō-WAY OVERHEAD TYPE Doors Step out ahead with so many improvements

You will see why Viking Freight Lines chose Ro-Way Doors. You will also see why you will prefer Ro-Ways. Contractors and Builders who have not seen them in operation can hardly appreciate the extra value they give, without extra cost. Since the first Overhead Type of door was built, there have been tremendous advancements, and today we believe you will agree that Ro-Way sets the pace in those extra refinements and improvements that insure lasting satisfaction. Ro-Way Overhead Type Doors are . . .

So Easy to Operate . . . So Quiet Running So Attractive . . . So Free from Trouble

In 1938, Ro-Way introduced in Model "J," that sensational improvement . . . Ro-To Live Spring. It gives a truly balanced lift . . . always . . . ending all side-drift and binding. In addition, last year we adopted for Ro-Way hardware, the same rust-resisting treatment used by all leading motor car manufacturers . . . the "Parkerizing and Painting" rust-resisting process. So efficient is this method that a test of 500 hours of power-pelting of Ro-Way hardware parts by salt spray showed no serious damage. Not one piece of other so-called "rust-protected" hardware came anywhere near the Ro-Way record in resisting red rust, white corrosion and tarnish. Recently, a third patented improvement was introduced by Ro-Way. It's called the "Crow's Foot" Curved Track Assembly, which gives full support to the outer bearings of the sheave wheels. Extra strength is added to the entire load sheave bracket. This new feature makes installation easier . . . gives greater freedom from mechanical troubles, and makes overhead type door operation smoother and more quiet.

Get all the facts about the Ro-Way improvements. They are yours without extra cost. Write today for Ro-Way Door Folder and Price List.

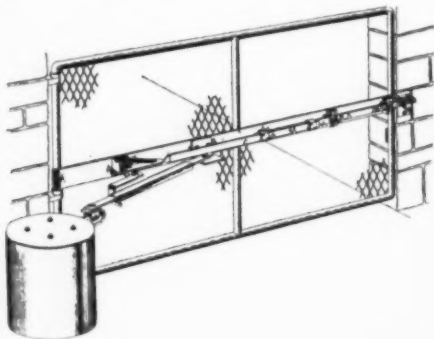
ROWE MANUFACTURING CO. 786 Holton St., Galesburg, Ill., U. S. A

*Improved
Overhead Type of Doors
Available for Every Purpose*

Electric Gate Operator

A NEW electric gate operator, manufactured by the Barber-Colman Co., Rockford, Ill., is designed to operate single-leaf swinging gates and includes a latch which automatically locks the gate when in the closed position.

Home owners find this operator a great pleasure since they can unload the task of opening and closing their gate on its shoulders. Although maximum convenience is enjoyed when this gate operator is controlled by radio from the moving car, it can also be controlled by keyed lock switches, ordinary push button switches, or by a driveway plate.

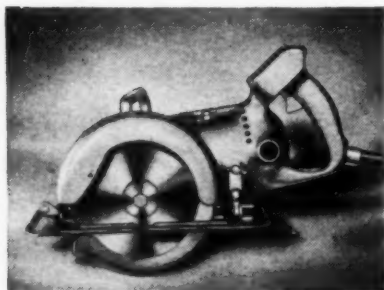


MOTOR contained in cylinder electrically operates gate from car or switch.

Portable Electric Handy Saw

THE American Handy saw is a powerful, portable electric saw developed after considerable research and testing by The American Floor Surfacing Machine Co., Toledo, O., to provide a saw that will save time and money for the builder.

The base can be locked at any angle from 0 to 45 degrees, and the 7-inch blade has a maximum vertical cut of $2\frac{3}{4}$ inches and a 45 degree angle cut of $1\frac{3}{4}$ inches. Various blades and abrasive discs are available, adapting this tool to rip-sawing, cross-cutting, metal cutting, slotting marble, asbestos, tile, porcelain and wallboard.



Many safety features are incorporated in this Handy saw, making it practically foolproof.

TELESCOPING guard covers blade of new 7-inch electric hand saw.

Improved 2½-S Non-Tilt Mixer

THE Kwik-Mix Concrete Mixer Co., Port Washington, Wis., a subsidiary of Koehring Co., has introduced a 2½-S Non-Tilt of newest design and construction.

The outstanding feature of this design is the absence of a drum ring gear, drum drive pinion and countershaft. The drum is driven by the rubber drum rollers, reducing noise, vibration and excessive maintenance costs. The mixer is easily handled by one man, has a low shoveling height, wide hopper, fast discharge and weighs only 980 pounds.

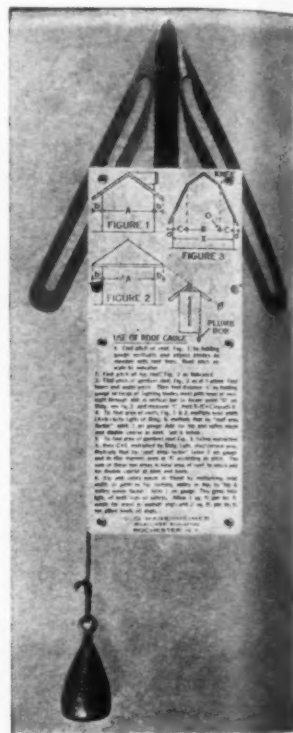
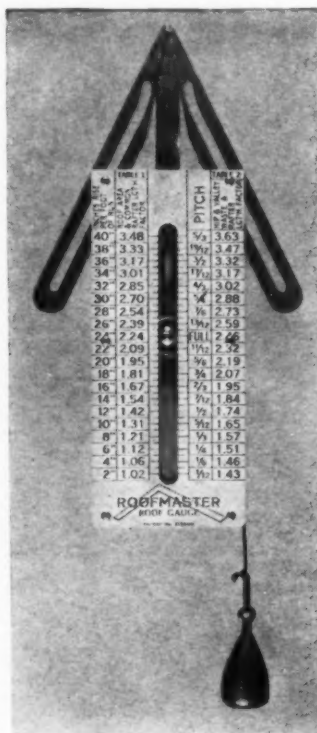


NEW end discharge non-tilt trail mixer.

New All-Metal, Adjustable Roof Gauge

HERE is a new all-metal, adjustable roof gauge that will quickly determine the pitch of any roof from a flat bungalow to a church steeple. It has been developed, perfected and is now being marketed by Clifford O. Magenheimer, genial and well-known field secretary of the Northeastern Retail Lumbermen's Association, 604 Case Building, Rochester.

This gauge makes it easy to determine the roof pitch, roof area, rafter lengths, and hip and valley measurements from the ground. The following simple instructions referring to the diagrams on the back of the gauge, as illustrated, show how



MAGENHEIMER'S NEW, ADJUSTABLE METAL ROOF GAUGE enables holder to determine pitch of any building from a bungalow to church steeple, and estimate roof areas without leaving ground.

the roof data is obtained quickly and accurately without endangering life and limb by climbing up on the roof:

1. Find pitch of roof, Fig. 1 on chart in right hand illustration, by holding gauge vertically and adjust blades to member with roof lines. Read pitch on scale at indicator.
2. Find pitch of hip roof, Fig. 2 as indicated.
3. Find pitch of gambrel roof, Fig. 3 as above. Find lower and upper pitch. Then find distance 'C' by holding gauge so hinge of sighting blades meets with knee of roof, sight through slot in vertical bar to locate point 'O' on building, see Fig. 3, and measure 'C', then $X = (C + C)$ equals 'B'.
4. To find area of roofs, Figs. 1 and 2, multiply total width ($A + B + B$) by length of building; and multiply that by "roof area factor"; table 1 on gauge. Add for hip and valley waste and double course at eave. See 6 below.
5. To find area of gambrel roof, Fig. 3, follow instruction 3, then 'C' + 'C' multiplied by building length; plus cornice projection. Multiply that by "roof area factor" table 1 on gauge and in like manner, area at 'B' according to pitch. The sum of these two areas is total area of roof, to which add for double course at eave and knee.
6. Hip and valley waste is found by multiplying total width of gable or hip forming valley or hip, by "hip and valley waste factor," table 2 on gauge. This gives total length of both hips or valleys. Allow 1 sq. ft. per lin. ft. waste for wood or asphalt shingles and 2 sq. ft. per lin. ft. for other kinds of shingles.

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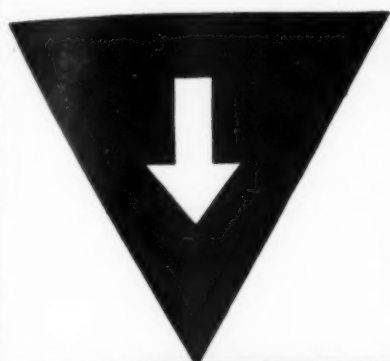
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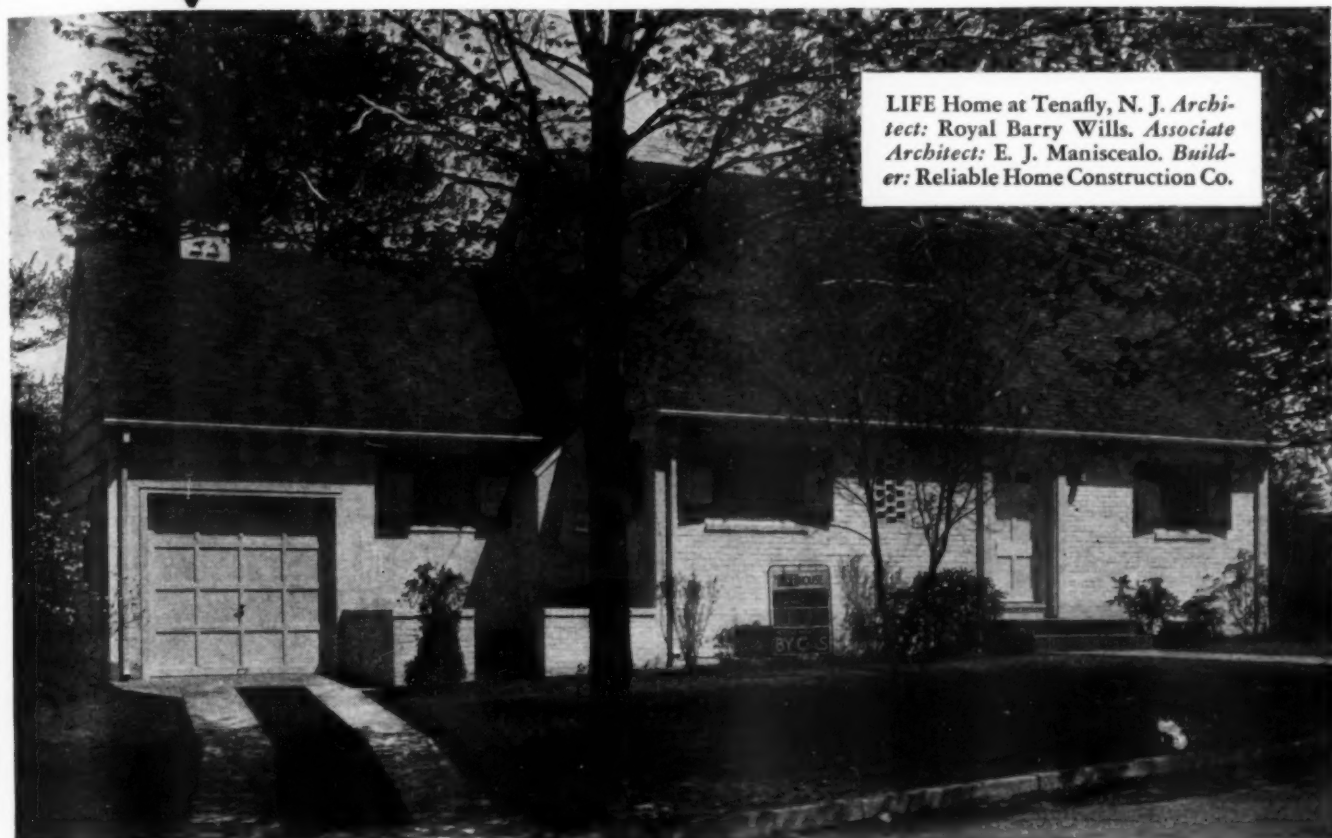
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HOW A BUILDER MADE THE MOST OF 2 GREAT IDEAS



LIFE Home at Tenafly, N. J. *Architect:* Royal Barry Wills. *Associate Architect:* E. J. Maniscealo. *Builder:* Reliable Home Construction Co.

"LIFE" HOMES.... "GAS FOR THE 4 BIG JOBS"

...You've got something there!

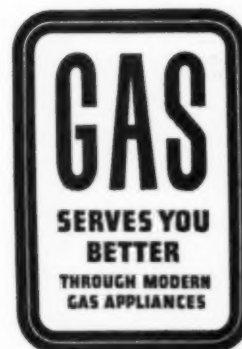
LIFE'S great idea was to make America *home-conscious* by publishing 8 inspiring designs by world-famous architects. And the Reliable Home Construction Co. (along with other alert builders) followed up with another when they actually built a "Life" Home and let modern automatic *gas* equipment handle the 4 major housekeeping jobs of cooking, refrigeration, water heating, and house heating.

No other single fuel is so well suited to

the advanced standards of living represented by the "Life" Home designs and no other fuel makes building money go so far. And gas appliances, in addition to their superior performance and longer life, assure important savings in first cost, installation cost, and operating cost.

See for yourself how "gas for the 4 big jobs" simplifies planning, building and *selling*! Visit the nearest All-Gas "Life" Home, or consult your local Gas Company.

AMERICAN GAS ASSOCIATION



This
Easy-To-Install
PAYNE
Forced Air Unit

✓ Heats!
✓ Filters!
✓ Ventilates!



"Spring-condition" the homes you build. Offer filtered warmth in winter. Cooling ventilation in summer. Flowing fresh air all the time.

When you specify a Payne Forced Air Unit, you can offer all these advantages — and more.

Lower building costs. *The FAU requires no basement. Compact design. Operating from kitchen, closet or service porch, the FAU takes up but little more space than a hot water heater. Lower upkeep costs. The FAU burns gas, the clean, inexpensive, modern fuel. And it burns the type of gas most economical in your community — natural, manufactured or liquid petroleum. Greater satisfaction. The FAU is foolproof, carefree and has automatic thermostat control.*

Make your modern homes completely modern with a Payne Forced Air Unit. Write today for details.

FLOOR FURNACES • FORCED AIR UNITS
CONSOLES • WINTER AIR CONDITIONERS
DUPLEX FURNACES • GRAVITY FURNACES

PAYNE FURNACE & SUPPLY Co., Inc.
BEVERLY HILLS, CALIFORNIA

News of the Month

Building Activities and Meetings

Residential Building Volume for July Maintains Increase Over Last Year

FOR the first half of July, residential building amounted to \$47,929,000, according to contract figures of F. W. Dodge Corporation. For the same period last year, the residential volume amounted to \$40,790,000, which means about a 17 per cent increase indicated for July of this year over last.

The statistics for the four classes of construction, as recorded for the completed month of June, are as follows:

	June, 1939	June, 1938	July 1-15, 1939
37 Eastern States			
Residential	\$111,896,000	\$ 85,682,000	\$ 47,929,000
Non-Residential	92,845,000	81,803,000	39,981,000
Public Works.....	73,607,000	74,832,000	38,692,000
Utilities	9,968,000	8,689,000	10,006,000
Total	\$288,316,000	\$251,006,000	\$136,608,000

Ford Foundation to Build Large Project

A LARGE-scale program which provides for immediate construction of a two-story community business center building, 15 apartments with accommodations for 293 families and 53 single homes in its new Springwells Park subdivision at Airport Drive and Greenfield Road, Dearborn, Mich., at a construction cost of approximately \$1,525,000 has been announced by trustees of the Ford Foundation; this organization was formed in 1936 as a non-profit corporation, for scientific, educational and charitable purposes.

In addition to these immediate building plans, the Foundation is preparing for early construction on the subdivision of 176 more single homes and apartments to accommodate approximately 158 families. This building program is believed to be the largest of its type undertaken in the Detroit area for many years.

Contracts for the construction of the first group of apartments have been awarded to the Byrne Organization, which has built similar projects in other parts of the United States. Local labor will be employed.

The new homes to be constructed in the Springwells Park subdivision will be for sale to the public; the apartments will be for rental. The latter buildings to be constructed at once are of the two-story walk-up type and two-story terrace type. They will conform to the most modern architectural planning, including approved air conditioning systems and electric garbage disposal units in each apartment. The apartments will vary in size from two to six rooms. The rental prices have not been definitely established but will be in the medium-price range. Garages will be available for those requiring them.

(Continued to page 82)

• • •

AT THE RIGHT: Having filled the first sack of cement at the new Green Bay, Wis., packing plant of Universal Atlas Cement Co., Vice President A. C. Cronkite doffs his goggles to pose for photographers. Opening of the new plant July 7, was celebrated by an Open House program attended by more than 200 customers, civic leaders and company representatives.



I BUILD 'EM FASTER *and* SELL 'EM SOONER *When they're Fully Insulated with* **C-S-I**



Your houses sell earlier and easier when you use C-S-I to give prospects the "full insulation" they demand today. With C-S-I you can offer full insulation as an added sales feature without buying added materials at extra cost. C-S-I replaces one-purpose materials — does double-duty, builds as it insulates!

With C-S-I you are not limited to just one type of insulation. C-S-I is a complete line—with C-S-I Asphalted Sheathing, in big, easy-to-handle sheets that speed up the job; with C-S-I Key Lap Lath and Asphalted Key Lap Lath, having "textured" plaster-bonding surface; with C-S-I Insulation Board and Decorative Plank and Tile Board, in 3 colors and 3 textures, for a wide range of interior finishes. Wherever it's used, C-S-I adds *structural strength* as it *insulates*.

Use the coupon to get samples of the C-S-I Line and big, illustrated, informative broadside, "C-S-I, Certain-teed Structural Insulation".

C-S-I BUILDS AS IT INSULATES — DOES DOUBLE DUTY AT ONE LOW COST



Certain-teed

REGISTERED U.S. PAT. OFF.

QUALITY MADE *Certain*
SATISFACTION GUARANTEE *teed*

CERTAIN-TEED PRODUCTS CORPORATION • GENERAL OFFICES, NEW YORK, N. Y.

Certain-teed Products Corp.
100 East 42nd St., New York, N. Y.

Gentlemen: Without obligation, please send me samples of the C-S-I Line and the broadside, "C-S-I, Certain-teed Structural Insulation".

Name _____

Address _____

City _____

State _____

There's profit in jobs like this with

TEMLOK DE LUXE



THE ALVIN SCHOOL, of Alvin, Texas, uses ceilings of Armstrong's Temlok De Luxe in white and ash to decorate, insulate, and quiet noise.

This factory-colored interior finish insulates, decorates, and quiets noise

PUBLIC ROOMS of all kinds—schools, theatres, restaurants—are excellent prospects when you sell Armstrong's Temlok De Luxe. This smooth-surfaced material offers customers a combination of advantages that's hard to beat. It insulates efficiently; its factory-finished colors give pleasing decoration; and it has a desirable noise-quieting factor. All three are important for public buildings.

Temlok De Luxe, made by the makers of Armstrong's Linoleum, enjoys the full confidence of your customers. That means it's easier to sell. And its six colors—ash, coral, cream, green, walnut, and white—widen the market for this modern insulating board.

Near-by stocks assure you of prompt, efficient delivery of Armstrong's Temlok De Luxe. Get complete information and samples by writing today to Armstrong Cork Company, Building Materials Division, 979 Concord Street, Lancaster, Pennsylvania.



Armstrong's
TEMLOK INSULATION
De Luxe Interior Finishes

TEMSEAL SHEATHING • LATH • MONOWALL

NEWS—

(Continued from page 80)

The apartment buildings will be of fireproof construction, being framed in Stran-Steel. Sidewalls will be of brick and the floors of reinforced concrete covered with hardwood flooring. These construction features will assist in making the apartments sound-proof.

The entire apartment project will be beautifully landscaped and developed as a garden. Approximately 80 per cent of the land assigned the apartment area will be devoted to gardens, decorative garden walls and walks.

A new community business center will also be built. The first unit of it will have space for nine shops on the first floor and office space for physicians, dentists and the Ford Foundation on the second floor. Ample room will be allowed for future expansion.

J-M Opens New Board Plant

THE new insulating board plant constructed by Johns-Manville at Jarratt, Va., is now complete and in production, and the initial carloads of material are being shipped from that point. The first venture of this company in the insulating board field took place eleven years ago, and ever since that time the company's sales of this product have been steadily increasing. In step with this progress it became evident some time ago that the company was rapidly outgrowing the production facilities maintained at Oswego, N.Y. As a result, it began to cast about for a suitable location with an adequate source of raw material for a new factory; and the Jarratt location was selected. A perpetual supply of suitable wood fibre is assured by large tracts of southern pine in the immediate vicinity. The plant is served by the main lines of the Virginian Railway and the Atlantic Coastline Railroad.

Those who have visited the new plant declare it the last word in manufacturing efficiency. From the delivery of the five-foot logs to the slasher building, to the application of an improved Glazecoat finish, the production flows smoothly and without backtracking. Laboratory control depots are located throughout the plant to ensure that manufacturing formulae governing thickness, density, thermal conductivity, tensile strength, transverse strength, waterproofing and light reflection are rigidly followed.



AIR VIEW of new J-M insulating board products plant at Jarratt, Va.

NEWS BRIEFS—

MARVIN GREENWOOD has been appointed general sales manager of the Celotex Corp., Chicago. J. Z. Hollmann, who formerly held this position is taking leave of absence due to ill health, but will return to the company in an executive capacity at a later date. Mr. Greenwood has been with Celotex since 1925. . . . **I-XL FURNITURE CO.**, Goshen, Ind., receives responses to its *American Builder* advertising from strange places—South Africa, England, South America, Hawaiian Islands, Cuba and Alaska have been heard from in connection with queries on this firm's Photo-Plan. . . . **MARK S. CHAPPELL** has taken over the job of merchandising manager with Wood Conversion Co. He will work directly with P. A. Ward, general sales manager, on merchandising and sales work. . . . **PRIZE AWARDS** were recently made to the winners of an air conditioning contest sponsored by the Trane Co., La Crosse, Wis.



MARVIN GREENWOOD

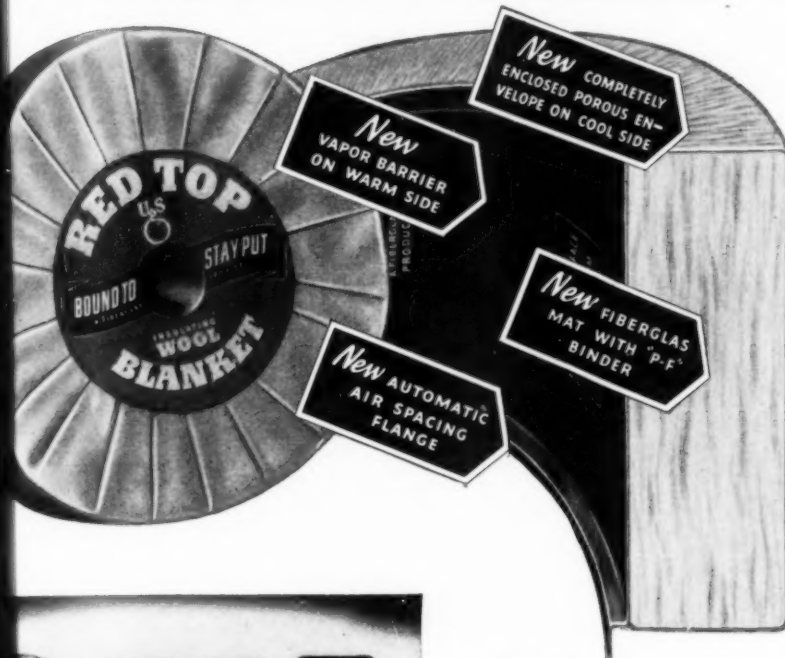
Big Happenings in the Insulation Business

You are reading about the most important insulation news of this decade. It should mean more profit, greater satisfaction, easier selling for you!

The completely new, complete line of Red Top* Wool Insulating Blanket products is one line of mineral wool insulation that actually and successfully meets all insulation's most rigid requirements! It is available in rolls, bats and junior bats.

It has been perfected by science and experience. It has been priced to aid you in competing with all other insulation materials when even the most limited budgets must be considered.

Read about it here. Then ask your USG Dealer or mail the coupon today for complete details.



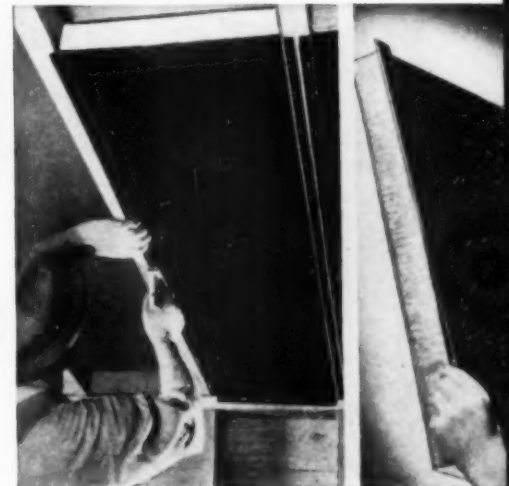
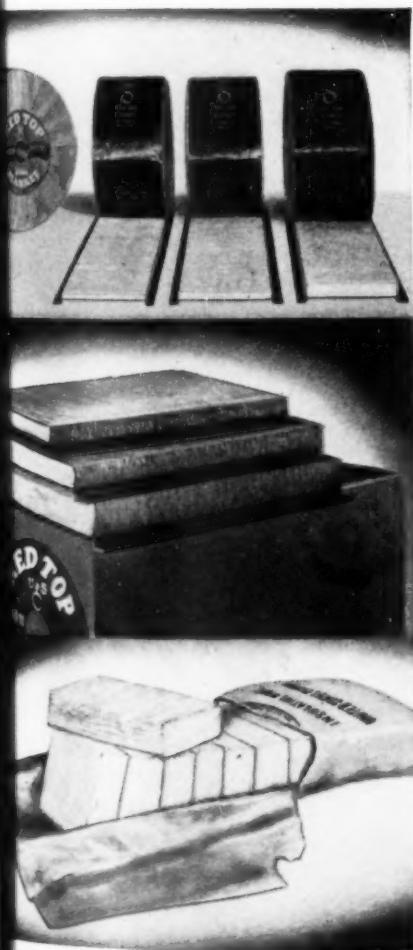
LEFT: 3 thicknesses—rolls and bats are all available in 3 thicknesses, "inch," "medium" and "thick"—all full stud width. Also in junior bats.

UPPER RIGHT: *Lively*, like a steel spring. Compress it; then release it. *It springs back in shape!*

LOWER RIGHT: *"Bound to Stay Put"*—stays in place. Does not settle and leave uninsulated spaces.

BELOW: *Tailored to fit*—less waste of time and material. Easy to cut to exact dimension.

*Registered Trade-Mark



RED TOP WOOL

"Bound to Stay Put"

Product of

UNITED STATES GYPSUM COMPANY



United States Gypsum Company
300 West Adams Street
Chicago, Illinois

Please send me full details about *Perfected Red Top Wool*.

Name

Address

City State

AB8

HERE'S WHERE
MESKER CASEMENTS
SAVE ME MONEY

and Incidentally, Help Sell My Houses



Look at that Mesker Casement go in that wall...

There's a real factory assembled window, delivered complete with sash already hung and primed. No inside trim to either buy or install. I save on field labor and mill work, get a better window, and really sell my houses.

Every day more contractors are learning of the great advantages and savings in Mesker steel sash. See your nearest Mesker dealer today for information and prices on the complete line of Mesker steel windows.

Mesker
SINCE 1879

MESKER BROS. 424 S. SEVENTH ST. ST. LOUIS, MO.

BOOKS on BUILDING

A REVIEW of current publications in the building field. For information about these books, write American Builder, Book Service Dept., 30 Church Street, New York City or the publishers.

HEATING, VENTILATING, AIR CONDITIONING GUIDE 1939. 17th. 1160 pages, illus., 6x9, flexible. American Society of Heating and Ventilating Engineers, 51 Madison Ave., New York City. \$5.00.

The 1939 edition contains 856 pages of technical reference data on the design and specification of heating, ventilating and air conditioning systems, together with a manufacturers' catalog data section of over 250 pages containing essential and reliable information concerning modern equipment.

SUNSET'S CABIN PLAN BOOK—edited by Ralph P. Dillon; illus. by Norman Gordon; cabin renderings by Clemens Friedell. 1938. 64 pages, 115 sketches, 7 x 9, paper. 50 cents.

Every Westerner wants a "vacation home" and *Sunset Magazine's* cabin plan book is for those who are still in the "talking stage." The planning of a mountain cabin or a beach cottage deserves as careful consideration as the planning of a real home, in the editor's opinion, and in this book everything is considered and thoroughly illustrated. Some of the subjects covered are: Selecting the site for a vacation home; water supply and sanitary facilities; cabin foundations; building the cabin fireplace, the log cabin, and a cabin of stone; frame cabins and beach houses; thirty cabin plans; cabin conveniences; cabin miscellany, such as fireplaces, beds, and bunks.

PAINTS AND PAINTING—by G. C. Molleson. 1939. 274 pages, illus., 5 x 7 1/2, cloth. David McKay Co., 604 S. Washington Square, Philadelphia. \$2.00.

This is a manual on the composition of paints and specifications for their use, the purpose of which is to present a compilation of useful and practical, rather than technical, information about the formulation, properties, and application of various paints. This material is designed to be of assistance to the purchasing agent, maintenance engineer, manager, property owner and others interested in or responsible for the maintenance and preservation of buildings, bridges, equipment and other miscellaneous structures. Such general information relating to paints and painting has been included as will give the layman or consumer a general and somewhat detailed knowledge concerning those subjects that will enable him to buy paint suitable for the purpose intended at a reasonable price.

THE BUILT-UP ROOF—edited by Bernard Sachs. 1939. 80 pages, 80 illus. 5 1/2 x 8 1/2, paper. Harris-Fox-Hoffman Corp., 425 Fourth Ave., New York City. \$1.00.

A working guide to all phases of roofing, compiled from material published over a period of years in the *American Roofer* magazine. Some of the subjects covered are: Equipment and materials, the roof crew, hotstuff and heating, preparing the deck, applying and flashing the roof, roof insulation, reroofing and repairs, blisters, estimating costs, preventing accidents, and pitfalls to avoid.

EFFECTIVE MARKETING—by L. Rohe Walter. 1939. 381 pages, 5 1/2 x 8, cloth. McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York City. \$3.00.

A practical book explaining the how and why of successful marketing methods, and classifying the marketing processes into a workable plan of proved utility. Seven marketing principles are presented: Why the public buys; how to fit your selling methods to the public's buying habits; how to know and understand your market; how to work out a modern sales plan; how to handle sales promotion; what makes a good advertisement; why public relations are important to the sales manager. To these principles are related clear, factual and experience-grounded chapters on product development, sales organization, market study, consumer analysis, and other problems which everyone who has wares to sell must face. Methods of formulating a plan and making it work, and typical marketing problems with suggested solutions are included.

Build COMFORT into Your Homes



Photo—courtesy Libbey, Owens, Ford Glass Co.

With WINTER WINDOWS applied with STANLEY STORM SASH HARDWARE

EVERY added comfort . . . every added protection . . . that you build into your homes means another plus when selling time comes! Of all the additions you can make, elimination of the discomforts of cold window areas is the most salable. Winter Windows, known as Storm Sash, properly applied with quality Storm Sash Hardware, eliminate drafts, fluctuating temperatures and cold floors; and save up to 20% on heating costs.

Stanley makes a complete line of Wrought Steel Storm Sash Hardware to take care of any window condition. A few of the most popular designs are shown here. Send for Booklet showing the line. The Stanley Works, New Britain, Conn.

STORM SASH FASTENERS



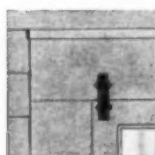
Set 1727
Non-Rattling



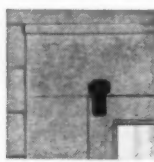
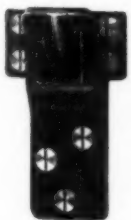
Set 1718
Reversible



Set 1719
Not Reversible



STORM SASH HANGERS



1715
For sash hung flush with casing.



1713
Used where head casing will not permit use of surface type.

1716
Wrought Steel

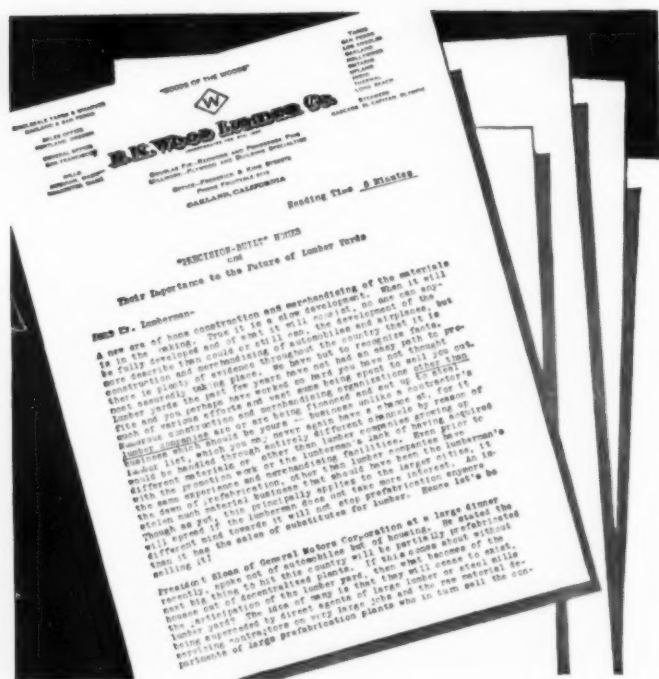
1716 1/4
Wrought Brass
For heavy sash hung flush with the casing.

STANLEY

TRADE MARK

HARDWARE FOR CAREFREE DOORS

You won't have to
take our word for this...



... "Business being stolen from lumber companies... It will spread if lumbermen do not take more interest... Precision-Built construction is your answer"...

This is the gist of a 5-page letter written by the E. K. Wood Lumber Company of Oakland, California, to lumbermen in their territory. This letter was written without any help or prompting from us.

We have secured extra copies of this letter. If you will mail in the coupon below, we will be glad to send you a copy. The facts speak for themselves.

Precision-Built construction means controlled building at controlled costs. Thus, the contractor is sure of his profits in advance. And you use local labor and local materials throughout. Get the details! \$3,000,000 of Precision-Built Homes have already been built. You don't have to experiment. Write today.

Weatherproof
HOMASOTE
Insulating and Building Board

HOMASOTE COMPANY, TRENTON, NEW JERSEY

Send us a copy of the E. K. Wood letter and full details of Precision-Built construction.

Name.....
Address.....
City..... State.....

LETTERS from Readers on All Subjects

Facts, opinions and advice
welcomed here

Good Town Wants a Contractor

Dalton, Wisconsin

To the Editor:

We have been trying for the past year or more to get a general contractor to locate here, one that could handle FHA projects, small town construction, and farm trade. But it seems that we have been unable to find anyone that is interested in this kind of a proposition.

We think we have something here that would be good for both the contractor and ourselves, as we are in a position to furnish many good live leads.

Such a man should be able to handle all kinds of work including concrete, lumber, roofing, paint, etc. We handle all these products and a contractor coming here should be able to apply any of these products, in order to handle complete jobs of all kinds from start to finish.

I am a Chicago Tech man myself and will be willing to cooperate with anyone coming here and furnish such leads as come before us at all times; we get many during the year.

DALTON LUMBER & FUEL COMPANY

By R. J. Vaughn, President

Secy. Mitchell Talks Back to Mr. Flynn

Richmond, Va.

To the Editor:

Have you read "Why Rent Is High" in the June 17th issue of *Collier's*? If you haven't, you ought to secure a copy and read it. You may feel like the little boy, who turned to his mother after the preacher who was conducting the funeral services had praised his father to the skies: "That's not pa he's talking about!" You won't be modestly declining honors when you say "That's not me he's talking about!" You'll justly be denying the broad indictments the author, John T. Flynn, makes against the members of our trade and allied industries.

Mr. Flynn is a versatile author. He writes a very readable story. He makes it interesting. And to the uninformed reader he makes it convincing.

What Mr. Flynn is deplorably short on is knowledge about our trade and its problems. Because some of our retailers adopt constructive merchandising policies and some of their competitors intelligently follow in their pathway John T. Flynn assumes that our trade is burdening construction costs so much that home building can't be economically done. He would not be familiar, naturally, with the fact that the progressive merchandiser, while by no means a price cutter and oftener than not the most profitable operator in his market, renders not the cheapest service but the most service obtainable. And the buyer remembers quality long after price is forgotten. His story is convincing all right... convincing evidence that you can't say: "It's true because I read it in the newspaper," or anywhere else. If what we read is true, it's because it correctly reflects conditions, not because of its convincing logic and reason thrown together by some author.

Mr. Flynn does not know that even the large mail order houses—with their huge purchasing power and low operating costs—can't render local service as cheaply as the retail building material dealer can. Like so much of the uninformed public Mr. Flynn does not know that even Uncle Sam, with everybody's purchasing power, has dismally failed in trying to compete with the construction industry in the low-cost housing field. He should read how Uncle Sam, indulging in his flair for doing things so much better than business men can, loaned N. J. Homesteads \$500,000 to show how the government can build low-cost homes; when the General Accounting Office finished adding up the figures, they totaled \$2,032,000!

VIRGINIA BUILDING MATERIAL ASSOCIATION
By Harris Mitchell, Secretary

(Continued to page 88)



The frosting sells the cake!



Whether it's a cake or a house, you'll sell it faster if it makes a buyer's "mouth water"! With a cake, the frosting does the trick. With a house it's paint!

When that paint's Sherwin-Williams, you can be sure it will not only look good, but will live up to its good looks. Sherwin-Williams Paint does more than "sell on sight"—it keeps your customers sold! Proof? Home owners prefer Sherwin-Williams 4 to 1 over any other brand of paint!

For your outside selling job—leave it to last-

ingly beautiful SWP House Paint to catch all eyes and bring the prospects in. Inside, let soft-toned, rich-looking S-W Flat-Tone; silk-smooth, washable S-W Semi-Lustre; and brilliantly colorful S-W Enameloid back

up your argument of "there's quality throughout this house . . . you can see that yourself"!

See your local S-W "Paint Headquarters" or telephone our local branch (in all principal cities). Or write for complete information to The Sherwin-Williams Company, Cleveland, Ohio and all principal cities.



SHERWIN-WILLIAMS PAINTS

If YOU are the MAN



WE WILL EQUIP YOU with exclusive line-production machinery—enabling you to manufacture modern building products at lowest cost. You will be able to supply the entire building trade with more attractive and permanent construction with savings at every step, from manufacturing to the completed job.



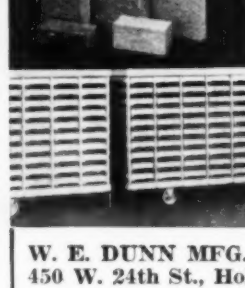
WE WILL SUPPLY YOU with new processes and formulas to enable you to manufacture products in 40 beautiful colors, shades and textures. Your product will be capable of meeting all known building requirements and is now being used by Government and City Building Departments throughout the country.



WE WILL GRANT YOU manufacturing franchise covering your locality, protecting your market, business and future, with available engineering and advertising service for rapid expansion of your business.



YOUR COMMUNITY will welcome your contribution to better buildings at lower cost. Your builders and prospective home owners are ready and waiting for better, lower cost materials which you will be able to supply.



YOUR EARNING POWER AND FUTURE. Present manufacturers have pioneered the way for you by establishing substantial business of their own. Some are selling at 100% over cost and securing the major share of the business in their territories.

YOUR OPPORTUNITY IS COMPLETE. One that is proven in every way. Prepared ready for you to cash in big on the wide building upturn under way.

YOU SHOULD INVESTIGATE while your territory is still open. Fill in and return coupon today. No obligation.

W. E. DUNN MFG. CO.
450 W. 24th St., Holland, Michigan

B-39

- ☐ Show me through your free books the possibilities of this business and the earning power of an exclusive plant in this territory.
- ☐ How a contractor can build better buildings for less with this permanent material.

Name _____

Address _____

City _____ State _____

LETTERS—

(Continued from page 86)

The World's Greatest Building Paper

Seattle, Wash.

To the Editor:

May I take this opportunity of expressing to you my sincere appreciation of the July issue of the *American Builder*. Truly, this issue demonstrates the truth of your claim that the *American Builder* is the "world's greatest building paper." We are naturally very proud that the "double lifetime" home built at Stamford, Conn., appears on the front cover.

RED CEDAR SHINGLE BUREAU
By W. W. Woodbridge, Secretary-Manager

Land Every Job You Figure?

Yakima, Wash.

To the Editor:

Do you have any data on how much lumber of different kinds a man can install per hour on an average?

I can't see what good your TruCost is because a man has to make a bill of material anyhow. He might just as well make it first as last.

A. C. BOZARTH, General Contractor

Many Don't Know How to Estimate

South Pasadena, Calif.

To the Editor:

You may be interested in the results of an examination I gave recently to fourteen carpenters, who desire to become carpentry instructors. California requires that an examination be given to measure their ability as carpenters. This exam is comprehensive in nature, including oral, written, and identification questions, drawing, blueprint reading, and estimating. The men were also required actually to do a piece of work. The point I desire to emphasize is this: Thirteen of the fourteen men failed in their estimating part of the examination! And some of these men are now in the contracting field! I believe this indicates a need for such material as I am preparing for the *American Builder*.

J. DOUGLAS WILSON

Likes Estimating Series

Los Angeles, Calif.

To the Editor:

May I compliment you on your publication of the series of articles by J. Douglas Wilson on "How to Estimate Accurately." There is constant need for this type of information in the field, particularly because other available publications are either obsolete or incomplete.

Information on estimating is enough in demand that I believe you would find it worthwhile to make these articles, or a similar compilation by Mr. Wilson, available in book form.

WEST COAST LUMBERMEN'S ASSOCIATION
By Theodore C. Combs, Field Engineer

Wants Costs, Even If They Don't Apply!

Stow, Mass.

To the Editor:

May I suggest two things: Outside dimensions of the body of every house plan so a builder can look and see at once if it is 24' x 30' or 30' x 36'. Also I believe every builder would like costs even though they vary tremendously all over the country. If not, then take one plan a month and have the costs for twelve sections of the country itemized like Purdue did.

A. H. WELCH

Way to Prevent Rust Streaks

Erie, Pa.

To the Editor:

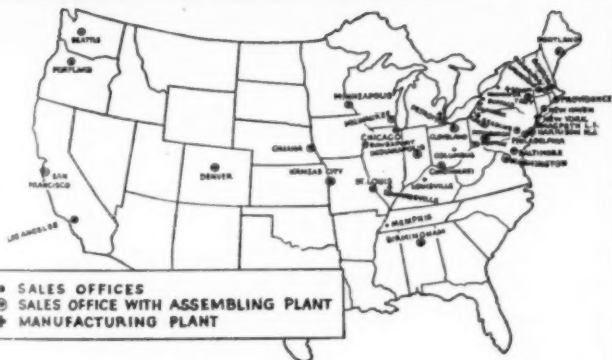
While writing, I wish to mention another detail which may or may not be worth passing on. After a winter or two dark streaks or water marks usually appear around metal straps used for ornamental purposes on front and other doors; which, in the case of stained and varnished doors, make the general

(Continued to page 90)

NO DAYS LOST Waiting for U. S. Deliveries

What heating equipment did you decide on?

U-S of course! We can be sure of quick service



Huge warehouse stocks from coast to coast in every important market center make "pick-ups" possible at any time . . . assure prompt shipments the day your order is received.

BUILDERS can rely on U.S. for warm air, hot water and steam heating equipment for every job . . . without delay . . . without lost time. Eight busy factories, thirty factory branches and hundreds of local sales offices are ready to serve you. Ample warehouse stocks make overnight shipment the rule. And the quality of U.S. products is a plus value in every home you build or sell. Write for complete information.

UNITED STATES RADIATOR CORPORATION
General Offices: Detroit, Michigan
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Today's buyers want more-house-for-the-dollar. Wolmanized Lumber helps you give them houses built to endure at prices which mean sales.

Use this natural, honest selling effectiveness of Wolmanized Lumber. Show your prospects Wolmanized Lumber used for sills, joists, and subfloors in your houses. Tell them: "See, these are danger points at which termites and decay can cause damage. But not in this house. We use Wolmanized Lumber here. This lumber, though it is clean and dry and looks like ordinary wood, is pressure-treated with a lasting preservative which protects against damage. It adds less than 2% to the cost of the house, but it protects the whole structure, and may save you repair bills amounting to many times more."

Your prospects understand that kind of saving. So do banks and financing agencies. Wolmanized Lumber is a sales point which more and more alert builders are using. Ask us to send you full information. **AMERICAN LUMBER & TREATING COMPANY, 1406 Old Colony Building, Chicago.**

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TO PROTECT THE
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Paint Distributor
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Houston warehouse of James Bute Company, weatherproofed and preserved with a treatment of No. 109 (stone gray) Bondex.

Everyone in the Southwest knows the James Bute Company—grants them “inside knowledge” of paint through many years of experience.

With dozens of products to choose from, this popular distributor selected Bondex for weatherproofing the Houston warehouse.

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CEMENT PAINT . . .**



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PREPARES ANY SURFACE
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Please send me illustrated folder on Bondex-Primer and Bondex.

Name _____

Firm _____

Address _____

City _____ State _____

188

LETTERS—

(Continued from page 88)

appearance unsightly. Practice is to tighten strap to door by means of screws which forms a small crack in which water, snow, and ice can lodge. To eliminate this I loosened straps and placed 1/8 inch thick brass washers between straps and wood around screws so that water, snow, and air can pass on through. Perhaps you have heard or know of some better way to take care of this condition, but it worked for me.

J. W. ANDERSON

“A.B.” Outlook Letter Clears Air

Newark, N.J.

To the Editor:

I'll have to give you credit for the excellent material contained in your letter on the building investigation uproar—I mean the letter dated July 11, 1939.

Builders around here have been up in the air, largely because of the newspaper publicity about racketeering and high costs in the building industry. Honorable builders who are trying to provide good houses at a reasonable cost are classed as fakers and almost have to apologize to prospective buyers for doing any business.

I have shown this letter to some of the local developers and they are making arrangements to have a digest of it published in the same newspapers that devoted so much space to the great investigation that will be nothing more than additional publicity and noise.

L. SEYMOUR

* * *

Air Conditioning Today

(Continued from page 59)

dent it will—there'll soon be plenty more.

If we can sell twenty million automobiles, and fourteen million telephones, and seventeen million radios, in these United States, can you point out any reason . . . now that we've got the makings of a line of home air conditioning systems that never should, under any circumstances, cost anywhere near as much (price range against price range, as the family automobile, and in many cases will involve a total cash outlay hardly bigger than an automobile down payment (with even that, if they wish, covered by an FHA loan) . . . why we can't take a shot at selling at least ten million installations?

Say we have ten million customers in sight, or at least where we can readily find and reach them. That's only half the story. The question has still to be asked: after you've found them, will they buy it?

Nobody, of course, can pretend he has a final answer to that question. What little buying they've so far done can hardly mean anything one way or the other. Because, as was pointed out in my article last month, we've hardly more than found out what we really have to sell; and if we didn't know that, how could we expect the customers to guess it?

In merchandising language, what has finally evolved out of the past few years of floundering and false starts is COMFORT. We can stop trying to sell 70° temperature in July, and 40 per cent humidity in January, now that we have found neither is necessary to the customers' comfort. We may, and will, in actual practice, win the praise of many satisfied and grateful purchasers with no more than the removal of ten to fifteen degrees off the top of each heat wave as it comes along. And to do that will cost a great deal less than it would to maintain 70° inside when it's 100° on the street.

So the question boils down to this: will the customers go for comfort? What do you think, yourself? Have you ever found any considerable number of your fellow-citizens who seemed to take any particular joy in discomfort? Of course, there are the occasional strange creatures who will tramp and scramble and flounder a dozen miles a day through mud and rain in April woods, solely to prove that they are smarter than a six-inch trout whose whole experience of life has been confined to a Government hatchery. And in India they say there are gentlemen who get a kick out of sleeping on beds of nails with the business ends sticking up.

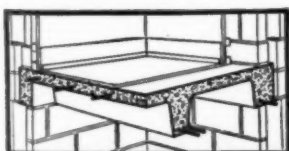
But some suspect that the virtuous Hindu, after the customers have left for the day, has no objection to relaxation upon a softer

(Continued to page 92)

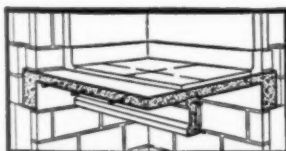


Firesafe, "football-proof" CONCRETE FLOORS —a "sales natural"

Home owners have quickly learned that concrete floors have a host of natural advantages. Even football doesn't shake them . . . they're warm, quiet, dust-tight, sag-proof . . . a barrier against fires. They take any covering—wood, tile, linoleum or terrazzo, or they may simply be colored and waxed. And concrete floors are so moderate in price that they are fast becoming standard in many localities.



CONCRETE JOIST CONSTRUCTION
Joists and slab cast in place at same time. The exposed ribs make an attractive beamed ceiling. Solid Slab Concrete Floor is pictured in large illustration.



PRECAST CONCRETE JOIST FLOOR
Job placed reinforced concrete slab over precast concrete joists. Joists exposed to make a beamed ceiling, or enclosed with metal lath and plaster.

FEATURED BY LEADING BUILDERS

A record-breaking number of builders and realtors, including some of the nation's largest operators, are featuring concrete floors this year. Experience with just one or two jobs will convince you that such floors make homes easier to sell, bring a better price and boost your reputation as a quality builder.

Get out in front in your community by featuring at least a concrete first floor in every home you build, no matter what its construction. Write us for helpful literature.

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A national organization to improve and extend the uses of concrete . . . through scientific research and engineering field work.

Whoops!



• Dirty finger marks seem to appear on the walls of the best regulated homes. And Masonite Colored Board makes such blemishes the least of a housewife's worries. This new Masonite Product has a special, satin-like finish that is washable.

All gone!



• Neutral soap and damp cloth are all that are needed to remove finger and other normal dirt marks from Masonite Colored Board. In addition to this lasting color surface, Masonite Colored Board offers valuable insulating properties and real structural rigidity.

Masonite Colored Board is washable!



• Masonite washable Colored Board is available in today's four most popular home colors—oyster white, ivory, green, buff. It is low in cost . . . easy to apply . . . and will give years of service. Of course, you want a free sample and full details about this modern wall and ceiling material. Mail the coupon today.

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"the Works" Sonny!*



*...It's
Northern Hard Maple*

Scrape it, scuff it, kick it, and ride your bike at will . . . you can't hurt Hard Maple! And when you've grown up, and that Hard Maple floor still looks like it did on "housewarming" night, your Dad's going to think mighty well of the contractor who laid those floors.

.. And during all the years in between, too. Because every day Dad lives with that floor, will add new evidence of the permanence of Hard Maple's beauty, its resistance to abrasion, its easy cleaning, and all-around contribution to a happy home.

There's nothing like Hard Maple for a home—as for a bakery or factory, mill or warehouse, school or store. Wherever you lay it, in strips or blocks, Hard Maple makes fast friends, and keeps them. But be sure it's all *Northern Hard Maple*, graded according to Association standards—look for the **MFMA** trademark on the wood.

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See our catalog data in Sweet's, Sec. 11/77.
Write for samples of color finishes available for homes. Our service department will gladly assist you with any flooring problem.

Floor with
MFMA Maple
(NORTHERN HARD)

Air Conditioning Today

(Continued from page 90)

couch; and even trout fishermen are not wholly unsusceptible to the charms of a snug fireside. And as for the rank and file of Americans, nobody has ever accused them of a lack of alertness to any opportunity to increase the comfort of their centrally-heated homes. And now that opportunity is here!

Yes, in spite of all disappointments, there are plenty of customers for air conditioning; and the customers will buy—provided you make it entirely clear to them (as it hasn't yet been made clear) and also make good on the promise, that when they buy air conditioning, what they really buy is year-'round home comfort. It is one of the oldest and best rules of selling, not to try to sell the thing itself; sell what it does for you. There never was a thing to be sold to which that rule applied more aptly than it does to air conditioning.

In choosing a title for this present disquisition, I was not unmindful that "Where the Customers Are Now" is a phrase susceptible of two interpretations. It might be taken to refer to their geographical location; and equally well, to their mental status . . . the present stage of their enlightenment regarding air conditioning. Both, naturally, are important; but personally I am inclined to believe that the second is more so—chiefly because it is the one that especially calls for action, right now.

As to geographical location, there are some general observations which may help you size up your prospects in the region in which you yourself are located, or which is most accessible to you market-wise.

First: as things now stand, your best market, for the sale of simple, low-cost apparatus, of the type which should sell in greatest quick volume—which as things now stand unquestionably means apparatus based on a warm air heating system—doesn't seem likely to lie either in the extreme North or in the deep South. Not in the far North; because while everybody in that region already has some kind of heating apparatus, they don't feel any great need for summer cooling equipment; and summer cooling is, obviously, the most appealing next step and the most dramatic sales point on the road to complete year-'round home air conditioning. In that region, consequently, you are pretty much thrown back, for immediate sales appeal, on the various new improvements in *winter* air conditioning . . . which are very much worth while, but lack the immediate dramatic appeal of summer coolness to the people in the belt that features blazing Julys and sweltering Augusts.

Conversely, in the deep South people lack the central heating apparatus which is the best foundation for the sale, first of summer cooling, and then of complete year-'round apparatus. Furthermore, the summers in the far South are not actually any hotter than in the intermediate zone; they merely last longer, and are on the whole more equable, so that the people who live there are made less acutely uncomfortable by them. And you need acute discomfort really to promote sales of summer comfort.

This brings us, then, to the decision that the great bulk of the customers for home air conditioning, now we really have it to sell, are to be found in the great middle belt across the continent, bounded more or less by—let's say—the northern boundary of Massachusetts, the route of the New York State Barge Canal, the south shore of Lake Erie, the Indiana-Michigan, Wisconsin-Illinois, Minnesota-Iowa and Nebraska-South Dakota boundaries, and so on across to the Coast; and on the South by the southern boundary of Tennessee, Missouri-Arkansas and so on west. It is, incidentally, the belt in which the great bulk of the customers for nearly everything else are to be found; why not for air conditioning also?

But unless you are a nation-wide manufacturer or distributor, you naturally want to bring this broad picture down into detail for your own neighborhood. What are the chances for air conditioning design, construction and installation contracts right in your own city, county or state, and what type will the people in that particular part of the country be most likely to prefer?

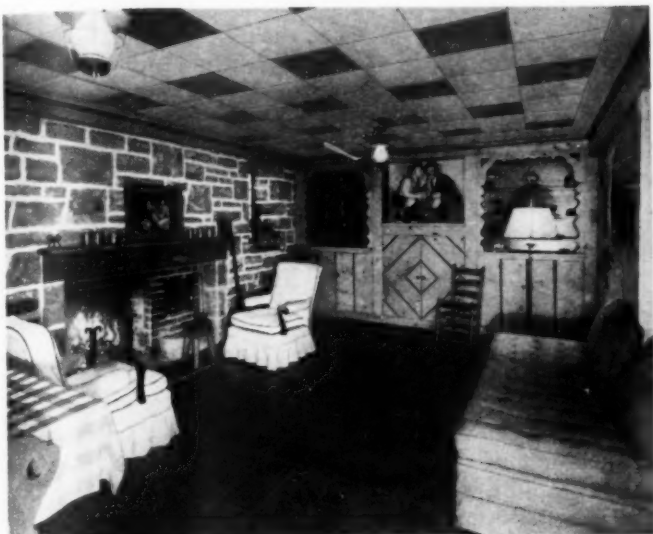
The best point for you to start, I think, is a study of the kind of houses people are actually living in now, in your neck of the woods. What proportion (if any) live in apartment houses; what proportion in one-family, two-family and four-family houses; how are they sorted out among bungalows, story-and-a-half, two-story and three-story homes? What makes a good market for these new, individual, low-cost, flexible home air conditioning jobs is a high

(Continued to page 94)

Basement floors must be

RUGGED

individuals!



In this rustically-styled recreation room in the basement of a Kansas City residence, the floor is Armstrong's Spanish Red Asphalt Tile with a feature strip of white. This floor is beautiful, low in cost, and durable.

**You get durability at low cost in
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WHEN you tackle a basement flooring job, turn to Armstrong for a really wear-resistant, low-cost asphalt tile. In fact, wherever a subfloor is on or below grade, Armstrong's Asphalt Tile is the correct flooring to use. It is also the correct flooring for any room where low initial cost is the deciding factor.

In Armstrong's Asphalt Tile, the colors run through the full thickness of the material. Scuffing feet and sliding furniture do not wear them off. Daily dusting, occasional washing and waxing keep them fresh and colorful for years. A wide range of attractive plain and marble effects allows you to create almost any type of design.

Sweet's carries full information. Or write now for a free, color-illustrated booklet. Armstrong Cork Company, Building Materials Division, 1218 State Street, Lancaster, Pennsylvania.

Armstrong manufactures the only complete line of resilient floorings—Asphalt Tile, Linoleum, Linotile (Oil-Bonded), Cork Tile, and Reinforced Rubber Tile. Let our Architectural Service help you create modern, low-cost floors.



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FOR THE BETTER
SMALL HOMES



ECONOMICAL OIL HEAT With Winter Air Conditioning

EVEN though a house is small, it is no longer limited to ordinary heating equipment. Thanks to Round Oak's careful development of its revolutionary oil-fired winter Air Conditioner, the better small homes of 5 to 7 rooms can now have the luxury and convenience of Automatic Heat with winter Air Conditioning. For this new Round Oak X-80 is so fair in price and so efficient in operation that it is not only practical, but also economical! Equipped with the famous Contraflow burner... plus unusually effective circulating, filtering and humidifying units... it produces a maximum of 84,000 BTU's per hour (larger sizes available) and actually provides low cost heat with conditioned air. See it at your Round Oak dealer's today... or mail the coupon below.



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ONE-PIECE ZINC SASH GUIDES
2x4 JAMBS—2x8 SILLS
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★ NO WEIGHT POCKETS ★

The Non-Stick Window assures the utmost in weather-tightness, ease of operation and appearance. It makes homes more salable. 2x4 frame, built in as part of the building wall, eliminates air space behind jamb. One-piece metal sash guides provide channels for the wooden sash and also serve as weatherstripping. No paint stick, no binding. Rust-proof spring balances, guaranteed for the life of the building, hold sash stationary at any point. Furnished as a complete unit, the Non-Stick Window saves you on installation cost, and once installed requires no further attention. Adaptable to all-priced homes.

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Street Address _____

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Air Conditioning Today

(Continued from page 92)

percentage of centrally heated one and two-family houses. Locate them . . . and especially the ones which have warm air furnaces . . . and you have found your customers.

Just how much information of that kind you already have, or how much you can get without too much trouble, I naturally don't know, because I don't know which of a couple of thousand big, middle-sized and small American cities is the apple of your individual eye. But your local newspaper ought to be able to help you quite a long way toward your goal—if it once gets the fragrant perfume of some new advertising in its nostrils it might even run a little survey for you! You'll want, of course, to pay particular attention to rental levels; your market starts a little above the bottom 15 per cent.

Once you can identify fairly closely this general group of people, you ought to have a pretty definite target to shoot at. You may not want to go to the expense of a complete survey or preliminary canvass to sort out the warm air furnace people for preferential treatment; but if you take 65 per cent of the total within your reach who live in homes of the general type we've been talking about, you'll have a pretty close approximation of your total number of A-1 prospects; for that's the percentage of warm air furnaces in centrally heated private homes, the country over.

There's another observation worth making on this general question of the geographical distribution of the customers. We don't really know, yet, just how variations in climate are going to affect the relative popularity of different types of cooling apparatus. But we can make a few guesses. For example, the higher you go above sea level, the less your chances will probably be for selling many jobs that include special cooling apparatus. For up there the days may be hot, but the nights are cool; and many people will be satisfied with an attic fan and a furnace blower, with which to fill the house with cool air at night and then, by closing the windows, hang on to it and circulate it in the daytime. And of course the character and abundance of the local water supply, and the run-off facilities, are going to decide, for you, your chances, if any, of selling simple water-cooling systems without special refrigeration.

But now, assuming you know where your customers are geographically, can we risk any sort of guess as to where they are at present mentally? I think we can. In fact some of us have already done quite a bit of looking into this important matter, with a view to avoiding, as far as possible, saying the wrong thing, and also, as far as possible, finding out what is the right thing to say, or at least the thing that most needs saying.

Some of these inquiries, I must confess, have had an unpleasant resemblance to the famous case reported by Stephen Leacock: "An examination was made of the brain of the deceased philanthropist. Nothing was found." A disconcertingly large number of our fellow-citizens really don't seem to have any opinion about air conditioning, one way or another. So it seems as though, in spite of the past five years or so, we must still gird up our loins and tell them all over again . . . still louder, if possible . . . until they begin to hear.

At the same time, interviews have shown a very fair, and on the whole encouraging, proportion of people who recognize the words "air conditioning" when they hear the words pronounced. I myself tried a very modest experiment about a month ago. I accosted one hundred different persons of both sexes at random—waiting for subway trains, mostly—and asked each one a single question: "what particular place, or kind of thing—building or what-not—do you think of when somebody says 'air conditioning'?" I grieve to report, however, that of the sixty-eight who gave me anything but a bewildered stare, not one said "home," or anything like that.

But of the sixty-eight no less than thirty-one replied, "a movie theater." Twenty-two others said "Oh, I guess a store or a movie. Why?" or words to that effect. Ten said "a streamlined train," and five made varying replies that indicated more or less that they associated air conditioning with some sort of vague engineering marvels.

I believe that this tiny survey of mine does throw some small light upon where the customers are now, mentally, with relation to domestic air conditioning. It looks to me as though there is a job ahead to make them realize that air conditioning and the comfort it brings is at last knocking at the doors of their own homes.



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It's the SLANT of vertical tracks, the corresponding heights of the hinges and the full-floating ball-bearing rollers that produce the MIRACLE The "OVERHEAD DOOR" to *Close Tightly* -- *YET -- Open Easily*

A NATION-WIDE SALES-INSTALLATION SERVICE!

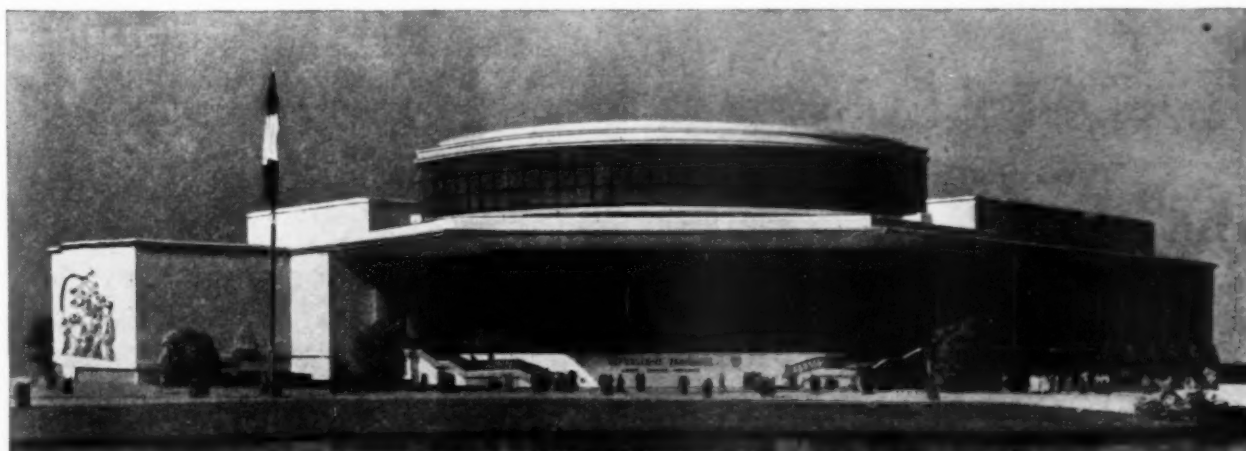
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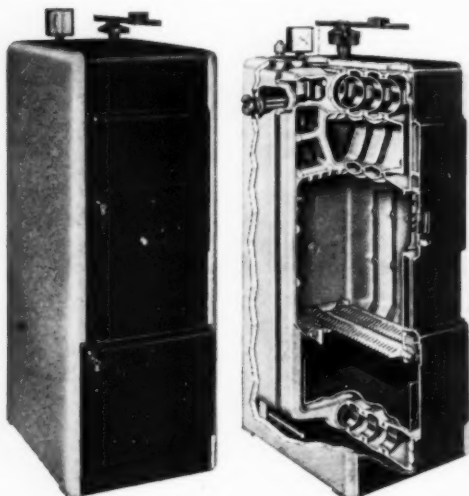
has a beautiful interior plastered with the famous finishing lime from our plant. When you visit the Fair, be sure to call at the French Pavilion. When you get back home, remember to order for all your work, the lime packed in Zig-Zag Bags—Ohio White Finish and Hawkspread White Finish.

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A BOILER properly designed FOR SMALL HOMES

It's new... entirely different! The No. 1 Series National Heat Extractor Boiler brings radiator heating within the reach of the small home owner. It's beautiful, efficient and economical. Can be used on steam or hot water heating systems... in the basement or on the first floor. Uses coal, oil or gas. Equipped with built-in hot water heater; new principle damper control and many other features.



FEATURES THAT HELP SELL HOMES

1. Built-in hot water heater reduces investment.
2. New damper regulation provides more even heat.
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Send your Specification Catalog Form
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THE NATIONAL RADIATOR COMPANY JOHNSTOWN, PA.

Building Industry Ills Aired

(Continued from page 43)

"The effect of these restraints is not only to maintain prices at a high level but also to increase them when volume increases. The result is the ridiculous spectacle of a rise of building costs amounting in some cities to nearly 25 per cent which choked off the building boom of 1936 and 1937.

"The combinations which cause these price rises in the face of increased volume have prevented even state and federal subsidies from giving adequate stimulus to private housing.

"The building industry does not seem capable of curing itself. Operating alone, without government protection from the aggression of others, a single heavy industry, or the distributors of its products, or the contractors which install them, or the labor which works on them, only handicaps itself to the advantage of others when it begins price competition.

"The most effective tools at present available to attack these restraints are the anti-trust laws."

Arnold listed a series of restraints in the housing field which he said "are so prevalent and in their aggregate so important that the situation is no longer tolerable." He listed producers, distributors, contractors, labor and building codes.

Producers of building materials, Arnold declared, use patents, basing point systems, price formulae, voluntary apportionment arrangements, and other devices of concentrated control to limit output, allocate markets and raise prices. There is a growing concentration of control in many of these industries, he said.

Building material distributors, Arnold declared, try to raise prices by establishing a fixed mark-up. They collusively determine their mark-up, and sometimes boycott manufacturers who will not cut off supplies from price-cutting distributors. They conspire with manufacturers' groups to establish a joint price control, and they attempt to see that all business passes through their hands and that no new methods are introduced. The great weapon in this field is the boycott, he declared, saying that groups of wholesalers may boycott those who sell direct to retailers, and groups of retailers may boycott those who sell direct to mail order houses or direct to consumer.

Contractors, declared Arnold, maintain bid depositories, central estimating bureaus, and establish bidding rings. They try to keep all the contracting work for local firms.

"*Building trades unions* often participate in these policies of restraint and add new restraints of their own," declared Arnold. They have frequently been used as the strong-arm squads for collusive agreements among contractors, he said. In other cases the unions themselves "have refused to permit the use of new products or new processes because of their fear that the new method might make it possible to erect a house with fewer hours of labor than the old."

Arnold introduced a new idea in trust prosecution when he suggested that it might be possible to investigate building codes and municipal ordinances which "develop into legally established boycotts, particularly relating to walls, roofs, electrical work and plumbing."

GENERAL ROBERT E. WOOD, chairman of the board of Sears, Roebuck and Company, who was the next witness, testified that because of labor union restrictions in Chicago his firm was unable to use its own plumbing and heating materials in erecting its own building.

"We have a big plumbing business," he testified. "But in our own home town of Chicago, even in our own building, we could not use our own materials." Because of such restrictions Sears, Roebuck and Company had to abandon a plan to build low-cost homes in Chicago for its workers. The high cost of land, together with the building codes and the restrictions imposed by unions and contractors, made the project uneconomic, he said, although they had previously been able successfully to build 52 homes for their workers at Kankakee, Ill. There the five-room houses cost their workers about \$3,400 with the land, which was about the same as they had been paying in rent.

DR. WILLARD L. THORP, of the Department of Commerce, presented elaborate data on the size, extent and ramifications of the construction industry. He pointed out that the construction industry is made up of small, separate local units, with a product neither uniform in type nor design, nor location nor size. Fifty-three per cent of the employers have one to three employees. Importance of freight costs was shown, the percentage of total

(Continued to page 100)

**Substantial
Economical
Adaptable...**

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RESIN-BONDED *Hardwood Plywood* WALLBOARD
PRICED with the LOWEST... Graded with the BEST

Takes PAINT, STAIN or
WALLPAPER perfectly

**7½¢ PER
SQUARE
FOOT***

*Price varies slightly according
to location of lumber dealer

Cross-grain construction gives extra stiffness
—no patches—no grain-raising—no checking

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48" x 96" x ¼" only
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a demand for something more ornate suited to finer in-
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inexpensive that the entire panelling for a

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costs less than \$55**

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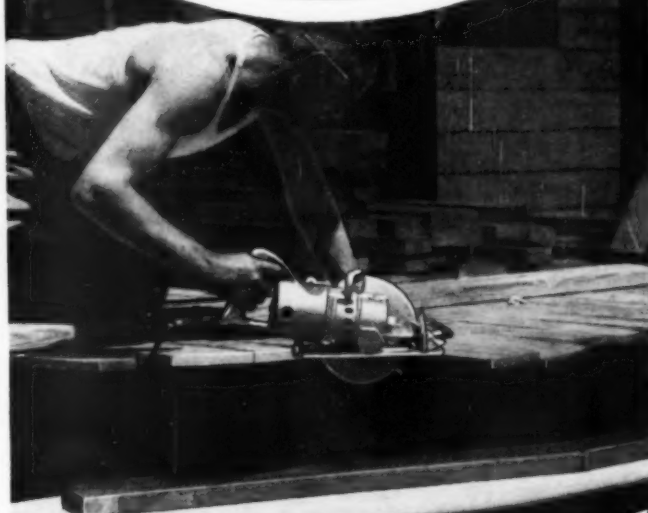
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**...ARE FAST AND EASY
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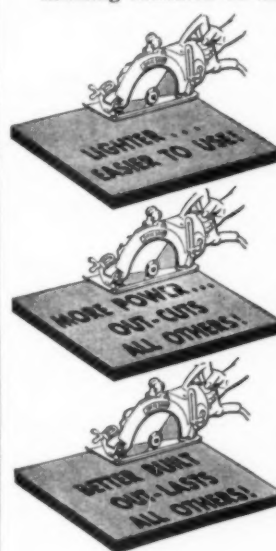
SKILSAW makes radius-cuts quicker and more conveniently than by any other method! That's because SKILSAW has plenty of torque and extra power to permit fast cutting against the added resistance of a curved line.

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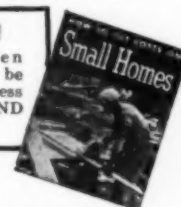
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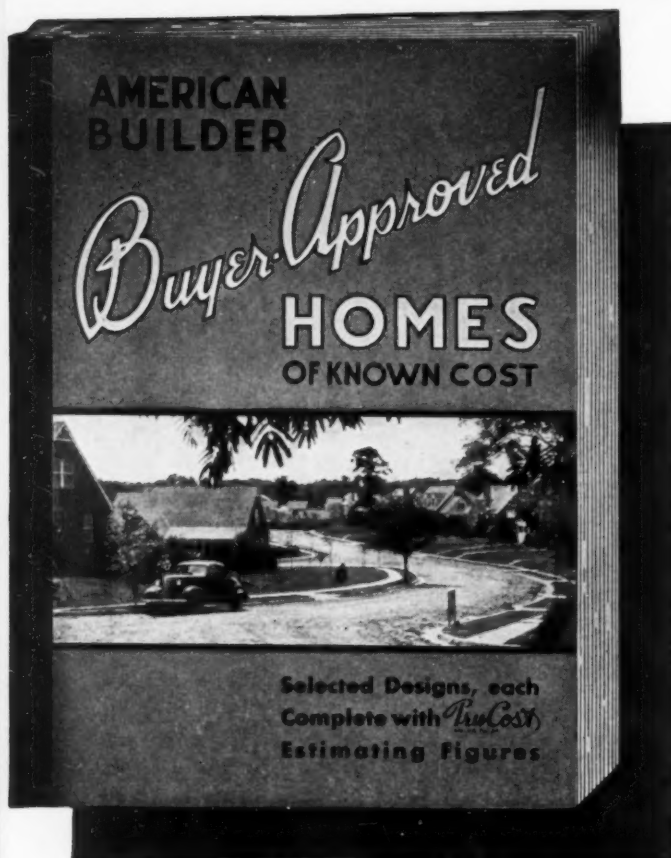


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And it is because they have so strong an appeal that they have been selected for this, *American Builder's* latest, assembly of the ultimate in home values.

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Among the 96 Homes are twelve Gems from the Old South, four examples of California's last word in home charm, seven of New England's latest contributions to home "homeyness".

Also representative homes from Suburban Chicago, populous Long Island, classy Westchester, Northern New Jersey, Iowa and Kansas, Detroit and Cleveland, Pittsburgh and Seattle, Milwaukee and Portland, Oregon—all of them today centers of busy home-building activity and most progressive developments in modern home satisfaction.

**A Few of the Famous "96"
are listed on the next page.**

Continued from preceding page.

Gems from the Old South



Two well-done Florida Bungalows in concrete masonry—Interesting Modern Version of New Orleans Colonial at Miami Beach—All Hardwood "Home of Three Centuries" built at Montgomery—Inviting "Northwood" Homes in Baltimore, with three exteriors for the one floor plan—Stone and Old Brick in well-arranged Virginia Home, "complete in every detail for comfortable living"—Unusually charming Richmond Home—Texas Cottage of 11,350 cubic feet, cleverly designed for families of low income.



California Contributes

A clear-cut 7-room Bungalow of low, horizontal lines, with an enclosed patio for outdoor living—An "Honorable Mention" Los Angeles home of six rooms, compactly and conveniently arranged—A home styled from an early California Ranch, with attractive loggia in the rear—A 5-room typically Californian, occupying a long shallow lot setting against a hill slope.

In New England's Best Traditions



We have a "Comfort Cottage" overlooking Lake Candlewood—A group of air conditioned "Woodridge" homes, carefully designed and sturdily built by a pioneer in the country estate idea—A Rambling Colonial in Rural Connecticut, with all the rooms on one floor excepting a maid's room and bath over the garage—a popular Hartford home with a "Breezeway" connecting kitchen with garage—A good-looking Hartford home with a cubage of slightly over 17,000—A small Colonial Beauty with downstairs bedroom and lavatory, and a smart recreation room in the basement.



Chicago's Choicest

Two fine Modified French homes at River Forest—Modern Cottage with Plywood Interior—Substantial Dutch Colonial 63 feet long placed lengthwise on a corner lot—Colonial Farmhouse with good plan and fine detailing—A Builder's Own Home in French Mansard style—Advance Modernism with working plans—Four Nixon Homes at Glenayre—Overhanging Colonial at Evanston—French Mansard at Kenilworth—Impressive 6-room Colonial of Stone and Wood—A picturesque 5-level house—and many others.

Wealthy Westchester

Offers some surprising values in low-cost homes. Among them a stunning 5-room house at Scarsdale—The "Greenfield" 5-room Colonial—The "Westminster" English Design Home—Dry-Wall Homes for \$43.85 per month—A noble group of "Alden Estates" Homes—The "Picture" Home at White Plains—Low Cost Fire-safe Home—Some "Plymouth Haven" Homes grouped about a court.

A triple-insulated home at Portland, Oregon—A carefully planned home in Indiana—A New England Colonial in Ohio—A compact "Economy" home in Milwaukee—An Olsen Basement-less Home in Pittsburgh—Popular homes built and quickly sold in Detroit, Reading, Pa., Cedar Rapids, Iowa, Teaneck and



Long Island

the most active home building region in the world offers: The "Williamsburg" house at Port Washington—A 5-bedroom Home at Manhasset—A Modernized Colonial at Montford Hills—Borough of Queens Prize Winner, "The Home of Today," at Belle-rore Manor—An attractive home on two levels.

Ho-Ho-Kus, New Jersey—A house put together with screw nails near Cleveland—A charming Kansas Cape Cod—A Monterey Style Home at Blue Ridge, Washington—A group of well-engineered Mass Production Homes at Clairton, Pa.

From Other Sections

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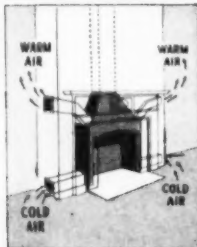
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HEATILATOR Fireplace

Building Industry Ills Aired

(Continued from page 96)

value at destination absorbed by freight being 56.7 per cent, for example, in the sand and gravel industry. He presented charts to show that in the case of a number of manufactured products a few large firms produced the major part of the industry's material—in some cases running as high as four firms controlling 80 to 90 per cent of production.

GERHARDT F. MEYNE, building contractor of Chicago, gave extensive evidence of restrictive labor practices. Opposed to this view, D. W. Tracy, president of the International Brotherhood of Electrical Workers, said that abuses of collective bargaining were local and relatively small in number. Furthermore, he declared, 90 per cent of the homes costing between \$3,000 and \$5,000 were built with non-union labor, and the cost of electrical work was only 2 per cent of total cost.

Other witnesses included Gerard B. Lambert of Princeton, N.J., retired drug manufacturer, and Henry J. Eckstein of New York, who urged the elimination of the speculative equity in housing developments to enable the building of rental housing projects with private capital at low cost. Mr. Davison was then called back on the stand to elaborate his suggestions for a thoroughgoing governmental research program to explore the technical aspects of housing. He suggested as a model the aeronautical research program of the Federal government. Arthur W. Binns, engineer and builder of Philadelphia, then described his successful project.

Considerable speculation was indulged in by attendants at the Committee hearings as to why Stewart McDonald, chief of the Federal Housing Administration, failed to appear at the hearings. It had definitely been announced that he would appear, and no reasons were given for his failure to testify.

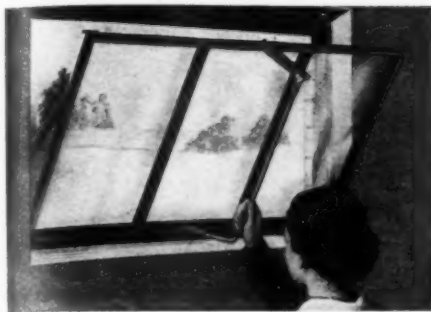
Two government officials did testify at length, namely, John Fahey, chairman of the Federal Home Loan Bank Board; and Nathan Straus, administrator of the U. S. Housing Authority. Both seemed to find the hearings a useful opportunity to describe in detail the operations of their respective organizations without much bearing on the subject of restraints in the building industry. Mr. Fahey demurred at the thought of lower interest rates, and Administrator Straus said that USHA had found the building trades labor "co-operating understandingly."

Interest in Hearing Wanes

By the closing days of the hearings, the spacious Senate caucus room appeared almost deserted. Barely a handful of persons attended the final session on July 14 when the summary by Dr. Theodore J. Kreps, educator and economic consultant to the Committee, was presented. Dr. Kreps made a scholarly summary of the remarks of the various witnesses and an analysis of the building industry, finally recapitulating with the statement, "Housing problems are phases of the great unsolved problems of our modern economy. Housing problems are legion in number. Housing problems are local problems."

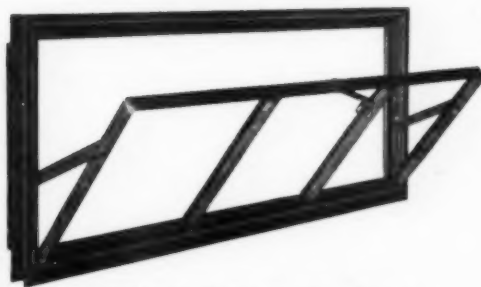
"A study of the cyclical fluctuations of the housing industry shows that periods of low interest rates are followed by greater activity in home building. If interest rates were lowered, more houses would be built." He stressed that the housing problem must be solved locally and that we need to know more about housing conditions locally. As a basic program he suggested city by city action as follows:

1. Estimate 25 year population growth of city and environs.
2. Estimate land use needs for the next 25 years.
3. Revise the zoning ordinances.
4. Eliminate inappropriate uses of land, especially residential.
5. Determine desirable distribution of housing with view to access to work.
6. Estimate housing needs for income groups and appraise present adequacy.
7. Control new land subdivision.
8. Revise building code.
9. Revise housing code.
10. Revise tax structure so as to get right use of land.
11. Enact minimum standards and decrowding ordinances.
12. Condemn obsolete structures unsafe and unfit.
13. Repair, modernize and reclaim buildings not yet obsolete.
14. Divide residential areas into neighborhood units.
15. Build neighborhood units as planned communities maintained and operated as if by a single ownership, either through limited dividend companies or other soundly organized corporations.

**VENTO "PREMIER"**

for MORE LIVABLE BASEMENTS

USE EITHER OF THESE
UNDISPUTED LEADERS
IN THE BASEMENT SASH
FIELD

**VENTO "CHAMPION"**

BOTH PROVIDE INDIRECT VENTILATION WITH WEATHER AND DIRT PROTECTION!

Generous top opening, permitting an abundance of indirect ventilation free from drafts (particularly desirable in laundry and recreation rooms). Prevents dirt, leaves, rain and snow from blowing in.

PLUS CENTER AND FULL OPENING—QUICKLY AND CONVENIENTLY

The "Champion" has a practical, easy-operating cam lock with inbuilt ring.—The "Premier," a "Versilator" locking bar which operates from the sill level.

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1. Heavy double channel, pressed steel frame. 2. All-welded construction. 3. Unequalled ease for detaching ventilator from frame. 4. The most practical method for puttyless glazing. Top of frame is easily secured to lintel. 5. Design of frame provides the easiest means of securing weather-tight installations. 7. Carefully prepared for quick and easy attachment of screens and storm sash—and the PREMIER costs no more than other first line windows.

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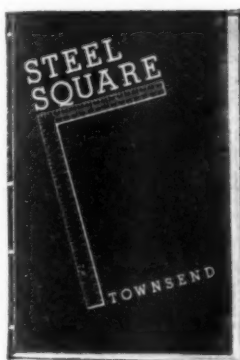
In fact, the "Champion" is definitely priced below many other first line basement sash. ASK YOUR DEALER ABOUT THEM OR WRITE FOR COMPLETE FACTS. Take the first step, NOW, towards making your basements more livable.

VENTO MAKES A COMPLETE LINE OF STEEL SASH FOR EVERY TYPE OF BUILDING AND IS VERY FAVORABLY KNOWN FOR ITS DEALER COOPERATION.

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STEEL SQUARE

By
GILBERT TOWNSEND



This new book on the steel square is filled with actual examples and no previously acquired knowledge of framing or other intricate carpentry operations is required. These examples are so illustrated and explained that the reader can easily apply the principles to practical jobs.

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1939. 96 pages, 101 illustrations, 5 1/2 x 8 1/2, cloth, \$1.25.

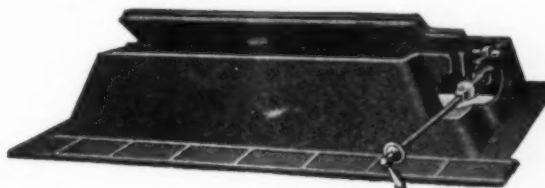
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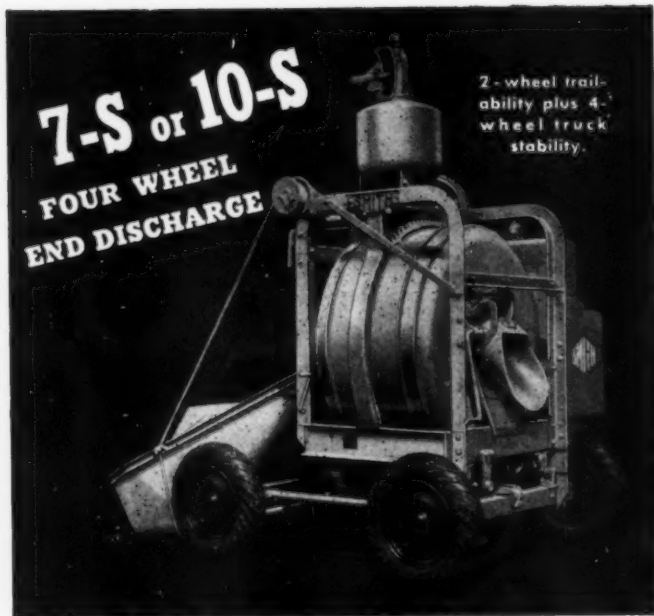
Whether you are building the "House of Tomorrow" or a modest bungalow—be sure to install a Peerless Fireplace Damper.



Your assurance of perfect fireplace operation.

Write for free descriptive booklet "Tomorrow's products for Today's homes"

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Send complete details on following which I have checked:

☐ Floor Sanders ☐ Floor Polishers ☐ Floor Edgers
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Name

Street

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Rentability Gained

(Continued from page 62)

First—The original 4th story was removed to bring it within the building ordinance height for ordinary construction.

Second—A section of the building equal to the size of a 4-room flat was removed. This not only increased the light in the new apartments, but gave better light and air to the old apartments adjoining and enhanced their value. I am calling this to your attention because the building, although reduced 30 per cent of its original volume, is earning 73 per cent more than it did.

The completed scheme for this building is to remove the entrances of the other apartments from the street fronts and have all apartments enter from the large rear court yard which is to be landscaped, after the old rear porches are removed.

Suburban Apartment Remodeling

Now let us take a two story building in Hubbard Woods where we expect to find people of means and refinement. The building, outwardly lovely, was terribly planned so that you could honestly say it had all modern inconveniences. In our northern suburbs their ordinances will not permit apartments except in buildings where there are stores, so this building contained stores and some offices. The poor class of tenants had driven out the desirable ones—even some of the stores.

Here on a large lot in a suburban town, where people live to get away from the crowding of the city, there had been crowded so many rooms that many of them were dark and poorly ventilated—4 bathrooms and 2 kitchens opening on a court 7x10 feet. Part of this building was removed to give better light and ventilation, apartments rearranged and stairways improved. (See "Before and After" plans, page 63.)

Here is the score: Modernization of apartments and offices approximately \$13,000. There were 14 units renting for \$485 per month, \$37 average. There are now 13 units renting for \$640 per month, \$50 average.

The increase is \$155 per month or \$1,860 per year, giving 14.3 per cent on \$13,000 invested.

In the store and basement portion \$12,000 was spent with an increase in store income of \$288 per month or \$3,456 per year. This is 28 per cent on \$12,000 invested. This large increase represents, in part, stores rented which could not be rented on account of general conditions of the building.

A condition was met in this building which seems a paradox. By installing a larger oil burner, with a capacity to burn more oil per hour, money was saved and better heat and more hot water were the consequence. The new burner was automatically controlled and burning more efficiently.

I want to mention one more building, a large apartment of 8 stories or more where the vacuum heating system and oil burners were not kept up-to-date, practically no service for 12 years; result, \$1,700 per year wasted in excess oil burned. An expenditure of \$4,000 is required to put this plant in proper condition, but that expenditure will net over 40 per cent in the savings and in better service.

An old maxim in economics, "Poor money drives good money out of circulation," may be paraphrased to read "poor tenants drive good tenants out of buildings."

It is difficult for most people to visualize the possibilities of an old building modernized but miracles can be wrought if we work toward the ideal.

Ideal apartments stay rented.

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Design No. 607
Woco or Laminex
Entrance Door

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In Selecting Entrance and Interior Doors Correctly

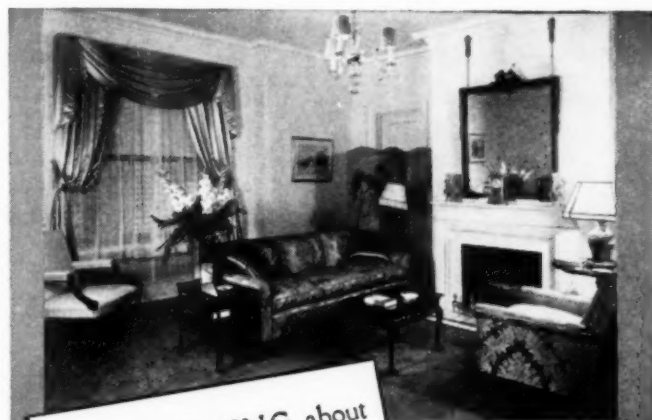
All in one catalog—Entrance Doors which are architecturally correct and meet any individual preference requirement—Interior Doors for any type of interior; includes the modern Streamliner which successfully combines strength, light weight, beauty and economy and provides numerous outstanding advantages—Garage Doors, the new economical overhead type WOCO Craw-Fir-Dor as well as conventional doors in many designs.

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The Gotham bespeaks
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good taste, its superb cuisine... Elegance is apparent; economy not forgotten.

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has all the best features of high priced metal roofings; protection from fire, lightning, wind and weather, ease of application, long life, perfected seams and an inner trough that makes leakage impossible. Yet Trofseam is priced to get volume sales, with a good margin of profit on your turnover.

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Model 1B MALLSAW—Capacity 2 3/4"—8 1/2" Blade

POWERFUL HANDSAWS THAT WILL SPEED UP YOUR WORK

For every job there is a MALLSAW that will save you money and speed up your work. Cutting capacities:
1 7/8", 2 1/2", 2 3/4", 3 1/8", 3-13/16", 4 5/8".

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Also, write for complete
data about door mortisers,
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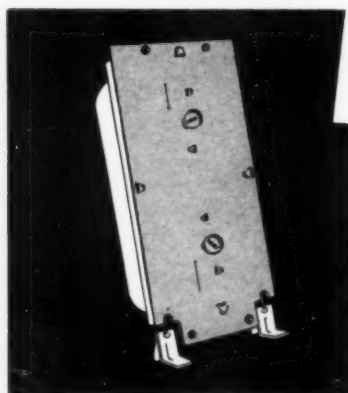
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**THE ONLY SASH
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Write today for further information about this sensational adjustable sash balance that eliminates pulleys and bulky weight boxes. Four million installations have proved that Duplex is easier to install, prevents rattling or jamming, lasts the life of the building! Let Duplex take the headache out of double hung windows.

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**1 ONE BALANCE
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Address the Chain Belt Company, 1621 W. Bruce St., Milwaukee, Wis.

REX

MIXERS

How to Estimate Accurately

(Continued from page 74)

mate as the amount of bracing needed varies according to the length of the rafter. A short rafter needs no center support. If a 2 x 4 rafter is inclined to be “springy” because of its length, sometimes a 2” x 6” rafter is used.

Rule: If one horizontal support is needed under the rafters, twice the length of the building equals linear feet required.

To find the number of posts to support the horizontal support, multiply the linear feet of material by 1/3. This will provide a post every 4’. The length of these posts can be scaled on the blueprint measuring on the gable end of the roof.

FILLER: The lumber used to close up the space over the top plate line is usually 2” framing stock if the exterior walls are to be plastered. See Fig. 5. When siding is used the top siding board is often fitted around each rafter. Occasionally a finished piece of lumber, called frieze, is used and fitted between each rafter.

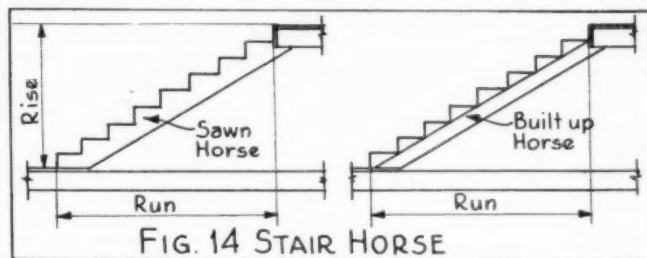
Rule: The linear feet of all walls that support the rafters equals the linear feet of filler required (or frieze stock).

Stair Unit

The estimating problem for stair framing materials is not a large one. Usually a special piece of material (called a stair horse) is needed on which the stair treads can be nailed. There is usually sufficient rough stock on the job with which the temporary stair treads can be built.

STAIR HORSES: A stair horse is the rough stock either cut or built up to form supports for the steps and risers of a stairway. See Fig. 14. An ordinary stairway always requires two horses. The size of the stock is given on the detail sheet or in the specifications.

Rule: The diagonal distance of the total run and the total rise of the stairway will give the approximate length of the stair horse. Total rise equals the vertical distance from the top of one floor to the top of the floor above. Total run is the horizontal distance over which the horse “runs.” See Fig. 14. Use the steel square to find the diagonal of this angle or measure the angle on any right angle. Increase to the next even length of stock.



* * *

“Bride’s Home”

(Continued from page 45)

erstripped, and equipped with copper screen and Venetian blinds throughout. It has a large wood-burning fireplace flanked by built-in bookcases. The dining room is papered with scenic wallpaper. It was furnished and decorated by a local department store, including even an ample supply of blankets, quilts and linen.

In addition to the advertising potentialities of this program it serves a useful purpose in showing that buying and owning a home today can be made extremely easy. It demonstrates that the home owner can afford a better class home, well furnished, including a car, without sacrificing too much or going into debt beyond his means.

Vibrating Forms

AT
2400 BLOWS
PER MINUTE
STANLEY
ELECTRIC
HAMMER



- ★ "Free-Thrown" Plunger — exclusive Stanley feature — eliminates shock and bounce.
- ★ No auxiliary equipment needed — just plug in and turn the switch.
- ★ Powerful Universal motor — extra strong duralumin housing.

Here's the tool for drilling, chipping and channeling concrete, stone and brick; chiseling wood; vibrating concrete forms; scaling rust, and other similar jobs. It is easy to handle and takes the hard work out of many everyday jobs. Ask your Stanley distributor for demonstration or write for descriptive literature. Stanley Electric Tool Division, The Stanley Works, 133 Elm Street, New Britain, Conn.

No. 310A
Capacity $1\frac{1}{8}$ "
(diameter in
concrete). A
powerful, well-
balanced and
exceptionally
lightweight
hammer.
Packed in
carrying case
with chucks
Nos. 2 and $2\frac{1}{2}$.
Also, No.
320A. Capacity
2" (diameter
in concrete).

STANLEY ELECTRIC TOOLS
"COST LESS PER YEAR"

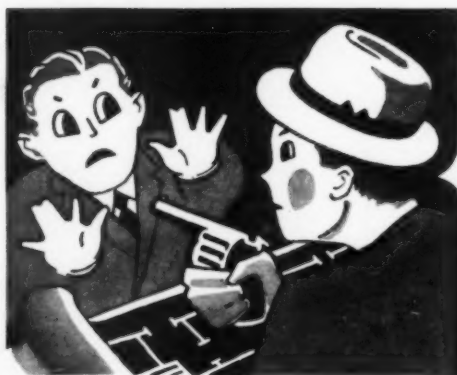


"Aristocrat of Hotels"—The Drake is distinguished for the spacious luxury of its rooms, the excellence of its cuisine. Yet tariffs are always moderate.

Under the Same Management as
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The Evanshore Evanston, Ill. The Town House Los Angeles
A. S. Kirkeby, Managing Director

The Drake

LAKE SHORE DRIVE • CHICAGO

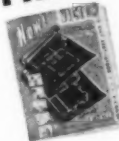


**SO! YOU
FORGOT**
to put in
that
**VICTOR
IN-BILT
EH?**

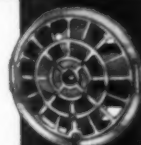
VICTOR In-Bilt VENTILATORS

No sir! You can't afford to neglect equipping the homes you build with Victor In-Bilt Ventilators. Cooking Odors, greasy fumes and smoke are going to cause a lot of dissatisfaction unless you install Victor In-Bilts to take them out. Cost is no excuse —there's a Victor model for every size and type of home —and all perform perfectly. Send for free Ventilation Data Book and prices today!

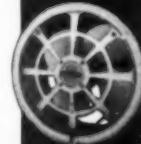
FREE!



VICTOR ELECTRIC PRODUCTS, INC.
3011 Robertson Avenue Cincinnati, Ohio



The De Luxe



The Standard



The Master

ALLITH



"50-50" PUSH-OVER HARDWARE

The PUSH-OVER Set is adjustable to fit all openings from 7'x7' up to 8'11" wide by 8'0" high. Sets for wider openings have two top tracks. Only $5\frac{1}{2}$ " headroom needed. All parts are self aligning for easy installation.

PUSH-OVER is the answer for safe, sure and perfect door action.

IMITATED — NOT EQUALED

ALLITH-PROUTY, Inc.
DANVILLE, ILLINOIS

New 3½-S KWIK-MIX non-till

Modern Rubber Roller Drum Drive

No ring gear—no pinion
—no countershaft, less
wear—smooth running.



LOAD WHILE
MIXING—
INCREASES
PRODUCTION
40 TO 50%

END
DISCHARGE

Write For Bulletin 2X

KWIK-MIX CONCRETE MIXER CO.
PORT WASHINGTON . . . WISCONSIN

MORE SALES Easier-Faster with I-XL Photo-Plan!



● The New I-XL KITCHEN OF TOMORROW

Every housewife longs for a lovely, cheerful kitchen . . . where drudgery does not exist. I-XL now manufactures just such a "Dream Kitchen." I-XL's EXCLUSIVE PHOTO-PLAN gives YOU an opportunity to show ANY housewife a beautiful kitchen with smart hardwood cabinets . . . gaily colored hardware . . . modern lifetime sinktop . . . in all a cheery room. I-XL's EXCLUSIVE PLAN is the most powerful sales weapon ever developed in the kitchen unit industry. Your prospect actually SEES her kitchen before it is installed. Presentation of the PHOTO-PLAN wins immediate acceptance. Best of all is this: I-XL KITCHENS ARE MADE TO SELL AT A PRICE MILLIONS CAN AFFORD AND YET NET YOU A HANDSOME PROFIT. Qualified dealers and salesmen may obtain sales franchises by filling out the attached coupon and sending it immediately.

FHA loans will finance kitchen remodeling.
I-XL Furniture Co., Inc. Goshen, Ind.

I-XL Furniture Co., Inc.,
Goshen, Ind.
Send immediately full details of your PHOTO-PLAN.

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XL

NEW INFORMATION— CATALOGS OFFERED

Readers Wanting to Receive Any of the Catalogs and Data Sheets Listed in This Department Should Write on Their Business Stationery Direct to the Manufacturer. When Writing, Mention This Department of American Builder and State Your Occupation or Business Connection.

"HOW TO BUY A BETTER HOME"—A new book just published by *Better Homes & Gardens*. It covers every phase of home building, home buying, home maintenance and home ownership, and has been prepared to aid home-owners-to-be in avoiding trouble and headaches and save money. Furthermore, it is offered by the publishers as a selling tool for dealers, builders and architects. Copies are generally available on the newsstands, or the book can be had by sending 25 cents to BETTER HOMES & GARDENS, Des Moines, Ia.

"APPALACHIAN HARDWOOD WALL PANELING"—A new 6-page folder illustrates very beautifully and effectively the line of hardwood paneling materials offered by the Appalachian Hardwood Manufacturers, Inc. Photographs and accompanying detail drawings show a variety of paneling styles, with a clear guide to their specification and installation. From the Research Department—APPALACHIAN HARDWOOD MANUFACTURERS, Inc., 414 Walnut St., Cincinnati, Ohio.

CONCRETE DATA SHEETS—Three new data sheets have recently been issued by the Association to help architects and builders write specifications for concrete houses. The first is entitled, "Precast Joist Concrete Floors with Cast-in-place Concrete Slab." The second is, "Portland Cement Stucco on Concrete Masonry Walls," and the third is, "Application of Portland Cement Paint on Exposed Concrete Masonry Walls." These are offered in loose-leaf form, 8½x11 inches, and are illustrated with photographs and detail drawings.—PORTLAND CEMENT ASSN., 33 West Grand Ave., Chicago, Ill.

"SELECTED BRYANT WIRING DEVICES FOR THE SMALL HOME MARKET"—A 6-page heavy paper data sheet presenting new and standard items in the Bryant line of switches, convenience outlets, lamp holders, etc.—THE BRYANT ELECTRIC CO., Bridgeport, Conn.

"KAWNEER SEALAIR WINDOWS"—An impressive 12-page brochure presenting the Kawneer double-hung sliding windows in all aluminum or bronze for homes and similar structures. Many photographs show actual installations.—THE KAWNEER CO., Niles, Mich.

PACIFIC GAS HEATERS—Vest pocket size folders give the pertinent information regarding the Pacific pipeless floor-furnace, the Pacific round element furnace, the Pacific forced-air furnaces, and the Pacific gas steam radiators. These are all popular heating equipment items that are gaining nation-wide use.—PACIFIC GAS RADIATOR CO., 1740 W. Washington Blvd., Los Angeles, Calif.

"GENERAL ELECTRIC HOME WIRING"—A new 20-page manual fully explaining the principles of home wiring to meet modern needs; also including a catalog of G-E materials suitable for commercial and industrial as well as residential wiring.—GENERAL ELECTRIC CO., Bridgeport, Conn.

CLARK ELECTRIC TOOLS—Catalog No. 39 is a 32-page book featuring Clark electric hand drills, the Clark electric sander and polisher, and the Clark grinders.—JAS. CLARK, JR., ELECTRIC CO., Louisville, Ky.

"CRANE SANITARY EQUIPMENT FOR HOTELS AND APARTMENT HOTELS"—A new 20-page two color booklet covering such subjects as modernization, bathroom planning, bathtubs, lavatories, water closets, showers, public washrooms, fittings, drinking fountains, kitchenettes, kitchen sinks, general heating, radiators, convectors, boilers, water conditioning, valves and fittings.—CRANE CO., Chicago, Ill.

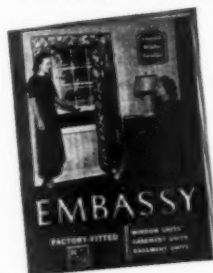
(Continued to page 108)

The Swing to EMBASSY America's Window Beautiful is ON!

BECAUSE

Every day home builders are making comparisons. Whether it be design, weather-stripping, ease of operation or ease of installation EMBASSY Window Units are found to be superior—more complete—more generous in value. Therefore, all a dealer needs to SELL the EMBASSY Window Unit is to SHOW it.

PRICED FOR SMALL AS WELL AS LARGE HOMES



Be sure to see the EMBASSY Window Unit at the Western Pine Exhibit, Home Building Center, New York World's Fair.

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ROACH & MUSSER CO.
628 Grand View Ave., Muscatine, Iowa

FACTORY-FITTED
Window Units
Casement Units
Basement Units



Build Houses FASTER And at LOWER COST

USE Speedmatic

the 2-in-1 electric saw... both hand and radial arm

Only SPEEDMATIC gives you

ALL THESE FEATURES:

- Trailing Guard** — protects from every angle; will not clog.
- Helical Gear Drive** — transmits more of the motor power to blade; 98% efficient; keeps going in tougher cuts.
- Extra-Wide Shoe** — no tipping, no veering from line, easy to guide.
- Balanced Grip** — requires only one hand.
- 5-Second adjustment** — for depth or bevel; no wrench needed.



Ask about complete line of Porter-Cable floor sanding machines.

TEN TIMES FASTER ...

... and ten times easier than manual sawing! The handy SPEEDMATIC portable electric saw will speed up your buildings... cut dollars from costs.

With the radial arm attachment, SPEEDMATIC, swings to any angle and tilts to 45°. With its wide variety of cuts and absolute accuracy the most complicated duplicate pieces are always actual duplicates. In a jiffy you can detach the SPEEDMATIC—ready for use as a portable hand saw. Users say: "the handiest, most reliable tool ever."

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America's Finest

All that is best in Southern California revolves around The Town House... establishes it as "America's Finest Hotel." Yet tariff is in keeping with today's economical trend... Home of the Famous Zebra Room.

Under the Same Management as

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The Blackstone CHICAGO	The Evanshire EVANSTON, ILL.

A. S. Kirkeby, Managing Director

The Town House

Wilshire Boulevard • LOS ANGELES

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of FINAL COSTS on

WOOD FLOOR FINISHING

WITH

LIGNOPHOL

LIGNOPHOL costs less than one cent per square foot. It is applied in one coat with a long handled brush—reducing labor to the minimum. The U.S. Forest Products Service says linseed oil does not even protect and—you know shellac and varnish are surface treatments that wear off.

When you use LIGNOPHOL there is nothing to wear off. Its ONE application gives smoother, harder, more attractive floors. Thousands of contractors are finding the LIGNOPHOL method of preserving and finishing floors (and trim) at 50% or more savings, the modern way to more profits and greater job satisfaction.

Find out more about advantages of LIGNOPHOL—

MAIL THIS COUPON TO-DAY!

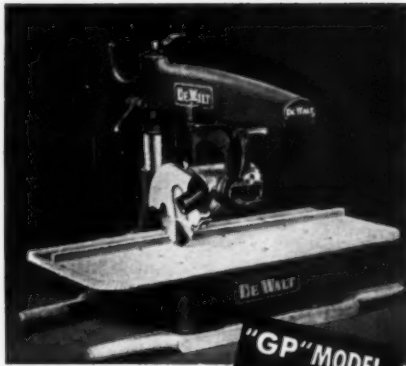
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Illustration shows how deeply LIGNOPHOL penetrates the wood.

SEE this NEW LOW-PRICED DE WALT!

Watch it in demonstration! See for yourself how flexible it is—how quickly it can be changed for many different operations! This De Walt woodworker is designed for builders . . . an all-purpose woodworking tool that saves 20% to 30% in building jobs. It's light in weight—can be transported easily. It's fast . . . accurate . . . powerful . . . safe. And it's low-priced! Your savings pay for it quickly. Let us give you a demonstration. Write today.



NEW ½ h.p.
MODEL GP

Only \$175⁰⁰
F.O.B. FACTORY

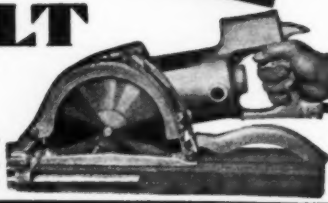
"GP" MODEL
PORTABLE ✓
FAST ✓
ACCURATE ✓
FLEXIBLE ✓
POWERFUL ✓
SAFE ✓

De Walt

425 Fountain Avenue,
Lancaster, Pa.

"The Brute"

of Hand Saws . . . Model D 12"
saw . . . with 4½" cutting capacity.
Fast . . . Powerful . . . Accurate.



WHO WANTS TO LIVE IN A DRAFTY HOUSE?



CALK WITH PECORA



CALK WITH PECORA

When there are drafts there are open joints, and that means water seepage and dust infiltration too. It also means larger fuel bills and more difficult regulation of room temperatures.

CALK all Joints WITH PECORA COMPOUND

It will pay builders to use Pecora Calking Compound. The slight extra cost is more than offset by providing a more weathertight house, with greater protection against early deterioration. Pecora will not dry out, crack or chip when properly applied. Available in bulk or in non-refillable metal cartridges of approximately one quart size for use with the new improved Pecora High Pressure Calking Gun, illustrated below.



This Gun

With 3 Nozzles and 4 Cartridges of approx. 1 qt. each
Shipped Express Collect for \$6.50

Write for illustrated folder

Pecora Paint Company, Inc.

Member of Producers' Council, Inc.
Established 1862 by Smith Bowen

Fourth St. & Reading R. R. Philadelphia



ALSO MORTAR STAINS • SASH PUTTIES • ROOF COATING
• PECOMASTICS FOR STRUCTURAL GLASS INSTALLATION

Catalogs Offered

(Continued from page 106)

"THE HUMPHREY HEAT TOWER"—A new 4-page data sheet presents this interesting development in forced air heating equipment. Designed to be placed in a closet or small centrally located utility room, the pipes radiate out from this heat tower through the different rooms, making it a low-cost yet efficient heating system.—GENERAL GAS LIGHT CO., Kalamazoo, Mich.

"LOW COST HEAT FOR LOW COST HOMES"—A 16-page two-color brochure presenting the Adams "Cheerfulator" direct gas heater. Drawings and diagrams show how heaters are installed in various parts of a home, and the several models and sizes are illustrated.—ADAMS BROS. MFG. CO., Inc., 1500 W. North Ave., Pittsburgh, Pa.

"ANGEL BOOTHS FOR RESTAURANTS, TAVERNS AND TEA ROOMS"—A 16-page catalog offers the Angel line of dining or soda booths in many styles and patterns. These are made of white pine and fir plywood, and are furnished in semi-set-up form, easily assembled. A companion piece entitled, "A Millionaire's Kitchen?" is also offered. It is a book of 24 pages and illustrates cabinets for the modern kitchen and other cabinet equipment.—ANGEL NOVELTY CO., Fitchburg, Mass.

"COLONIAL WINDOWS FOR SMALL HOUSES"—No. 1 of a series of four portfolios of window ideas by Fenestra. It contains six beautiful loose-leaf design pages illustrating the prize winning designs in the recent Fenestra architectural competition. A companion piece, No. 2 of the series, devoted to "Kitchen Windows for Small Houses," offers five additional portfolio pages.—DETROIT STEEL PRODUCTS CO., 2250 E. Grand Blvd., Detroit, Mich.

SUPERFEX FURNACES—Two new brochures of 12 pages each present, respectively, the gas-burning Superfex furnace and the oil-burning Superfex furnace, each of which is specified for "24 hour air conditioning." Full information is given regarding the sizes and capacities and mechanical features of these air conditioners, and the home heating satisfaction which follows their use is illustrated in a very interesting way.—PERFECTION STOVE CO., Cleveland, Ohio.

TORIDHEET AIR CONDITIONERS—A new 4-page data sheet presents the Toridheet oil-fired furnace with humidifier and air circulator. This is the outfit with an "Aiolator," the new discovery which cuts fuel consumption. The special features of this heater are thoroughly illustrated.—CLEVELAND STEEL PRODUCTS CORP., Toridheet Div., Cleveland, Ohio.

"STANLEY COLONIAL HARDWARE"—A new 4-page data sheet illustrating Stanley Early American and Colonial hardware for interior doors and cabinets, blinds and shutters, and garages. The sketches and details will be interesting both on new home construction and on remodeling.—THE STANLEY WORKS, New Britain, Conn.

TO REDUCE NOISE—A new folder has been issued covering the use of Corkoustic and Temcoustic materials, which are successfully used in reducing noise and improving hearing conditions in all types of buildings. This folder presents a discussion of acoustics, and describes Armstrong's solution of the problem.—ARMSTRONG CORK CO., Lancaster, Pa.

"CLUTTERED CLOSETS—PET PEEVE IN AMERICAN HOMES"—Twenty well illustrated pages in a new catalog give the easy solution to this problem, namely, K-Venience clothes closet fixtures. These K-Veniences double closet capacity, provide a proper place for everything, and keep closets trim and neat. They are a great help to the operative builder, increasing the sales appeal of his houses.—KNAPE & VOGT MANUFACTURING CO., 608 Richmond St., Grand Rapids, Mich.

"THE GLOGAS FIREPLACE WILL HEAT YOUR HOME"—An interesting 4-page data sheet suggests best procedure for installing this attractive gas-burning heater.—SUPERIOR FIREPLACE CO., 1046 S. Olive St., Los Angeles, Calif.

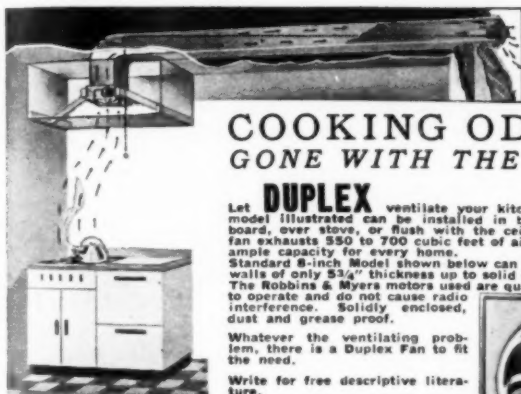
(Continued to page 110)

There's PROFIT in ALLMETAL WEATHERSTRIP

**EASIER INSTALLED
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Every home should have ALLMETAL weatherstrips on doors and windows. Home buyers demand it. Architects recommend it. You can make EXTRA PROFITS installing these well known, consistently good weatherstrips. Write for our prices on Metal Weatherstrip, Calking Compound, Metal Thresholds, Metal Wall Board Trim, Counter Edging, Sink Rims, etc.

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231 West Ohio Street CHICAGO
OVER 24 YEARS SATISFACTORY SERVICE.



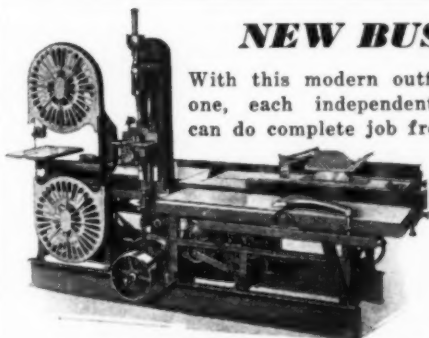
COOKING ODORS GONE WITH THE WIND

Let DUPLEX ventilate your kitchens. Ceiling model illustrated can be installed in bottom of cupboard, over stove, or flush with the ceiling. The 8" fan exhausts 550 to 700 cubic feet of air per minute—ample capacity for every home. Standard 6-inch Model shown below can be installed in walls of only 5 3/4" thickness up to solid masonry walls. The Robbins & Myers motors used are quiet, economical to operate and do not cause radio interference. Solidly enclosed, dust and grease proof.

Whatever the ventilating problem, there is a Duplex Fan to fit the need.
Write for free descriptive literature.



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TERRITORIES OPEN FOR DISTRIBUTORS



NEW BUSINESS

With this modern outfit—8 machines in one, each independently operated—you can do complete job from start to finish.

MODEL "A" PLANING MILL SPECIAL

From rough lumber to finest trim and finish, this compact combination woodworker does it all! You get more business with a Parks.

Complete line of individual and combination machines
Good Woodworking Machines Since 1887
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Students of the International Correspondence Schools have at their disposal the biggest, best equipped building laboratory in the world! And that "lab" is—

The building industry!

I. C. S. students enroll for studies related to their work. On the job, they prove and apply what they learn through their I. C. S. Courses. There they prepare themselves for better positions, by combining sound training with actual practice!

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| <input type="checkbox"/> Building Estimating | <input type="checkbox"/> Foremanship | <input type="checkbox"/> Steam Engineering |
| <input type="checkbox"/> Chemistry | <input type="checkbox"/> Heating | <input type="checkbox"/> Steam Fitting |
| <input type="checkbox"/> Civil Engineering | <input type="checkbox"/> Machinist | <input type="checkbox"/> Structural Engineering |
| <input type="checkbox"/> Coal Mining | <input type="checkbox"/> Mechanical Drafting | <input type="checkbox"/> Surveying & Mapping |
| <input type="checkbox"/> Contracting and Building | <input type="checkbox"/> Mechanical Engineering | <input type="checkbox"/> Ventilation |
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30% to 40% FASTER

MEASURING BATCH
HOPPER
Fast as a
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TIMKENS,
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Longer Life

JAEGER UTILITY MIXER — Costs about 1/2 the Price of Heavy 5S Non-Tilts!

Load while you mix and discharge — get 30 to 40 yards of concrete a day — all most jobs can handle. Patented Criss-Cross Re-Mix Drum produces better concrete. Siphon tank for accurate water measuring — Biggest non-tilt mixer value on the market.

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Gentlemen: Send Catalog and Prices on latest Utility Mixer and other sizes Non-Tilts, Tilters, for Concrete, Mortar, Plaster.

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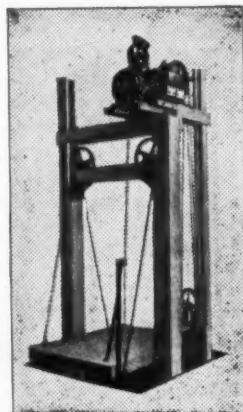
Ready FOR IMMEDIATE INSTALLATION!

Brecher Wood Mantelpieces (40 authentic Period Designs) are constructed for Lifetime Beauty and completely assembled—ready for immediate installation! Write today for complete information and get your share of profits that come from selling the finest—

BRECHER MANTELS

IN AUTHENTIC PERIOD DESIGN

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KIMBALL LIGHT ELECTRIC ELEVATORS

A line of powerful light electric elevators built for every purpose. Sawed, drilled and fitted for rapid assembly—strong—efficient and easy to install. Cost little to operate.

FREE Engineering Data

Present your elevator problem to us and let our engineers help. Descriptive literature on request.

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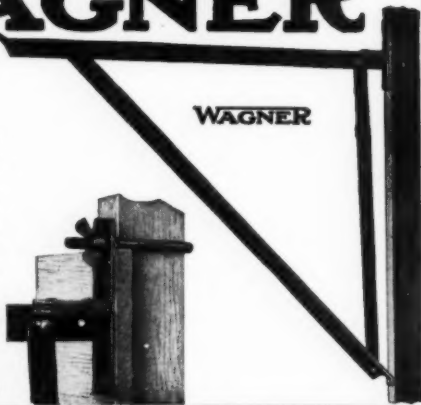
Council Bluffs, Ia.

WAGNER

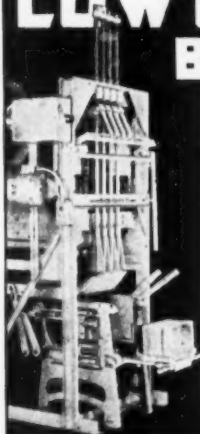
Folding Scaffold BRACKETS!

Safety for men! Easily and quickly installed—folds compactly. Attached with spikes or hooks furnished for attaching to studding. Holes provided for wires to eliminate side sway. Write for information on complete line of scaffold, ladder and roof brackets.

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LOW COST MACHINE BLOCK-BRICK-TILE



SUCCESS equipment assures profitable products plants.
BECAUSE—they are efficient, self-contained, offering lowest production cost with lowest maintenance.
BECAUSE—they produce a complete range of products, all sizes and faces of block, on plain pallets.
BECAUSE—they make block, building tile and brick by interchanging simple production machines.
ALL THESE ADVANTAGES with minimum investment in equipment. All planned for easy expansion as your business justifies.
INVESTIGATE. Start now to bigger profits. Write today for free catalog. **SUCCESS** plant from \$190.00 up shipped on 15 days trial.

CONCRETE EQUIPMENT COMPANY

514 Ottawa Ave.

Holland, Michigan

PIONEERS OVER 30 YEARS

Catalogs Offered

(Continued from page 108)

"HEATILATOR FIREPLACE, THE FIREPLACE THAT CIRCULATES HEAT"—A beautiful new 24-page portfolio containing many inspiring designs for fireplaces, and showing clearly how a fireplace can be made into a genuine heating plant. Architects' perspective sketches and photographs of actual fireplace installations give this book special value to the home designer. Clear, large size details show recommended details of fireplace construction.—**HEATILATOR CO.**, Syracuse, N.Y.

"MILCOR VENTILATORS AND SKYLIGHTS"—Catalog No. 42 is a 12-page data sheet. It gives complete dimensions for each ventilator, showing flue size, height, width, exhaust displacements and crated shipping weights. In the skylight section, full size cross section details of each of the different types of Milcor skylights are given.—**MILCOR STEEL CO.**, Milwaukee, Wis.

PARSONS' ECONOMICAL METHOD FOR APPLICATION OF ROOFING SLATE—A new 4-page data sheet illustrates and describes the Parsons method which saves approximately 50 per cent in the weight of a slate roof, and 35 per cent in its costs.—**PARSONS BROTHERS SLATE CO.**, Pen Argyl, Pa.

"NSW NON-STICK WINDOWS"—A new 8-page data sheet illustrating the N.S.W. double-hung window unit. This is factory-fabricated and fitted, and possesses many unique features.—**N.S.W. CO.**, 2137 Gratiot Ave., Detroit, Mich.

"TODAY, ALL EYES ARE ON THE KITCHEN"—This title, followed by the advice, "Make Yours a Coppes Napanee Custombuilt Kitchen" is the theme of a new 4-page data sheet which illustrates the many distinctive units in the Coppes Napanee Custombuilt line.—**COPPES INC.**, Nappanee, Ind.

"ANDIRONS, FIRETOOLS AND OTHER FIREPLACE FURNISHINGS"—The title of a new 28-page portfolio illustrating these "Colonial" lines. Some very choice designs are included, and many valuable fireplace suggestions made.—**COLONIAL FIREPLACE CO.**, 4603 W. Roosevelt Road, Chicago.

"CHROMEDGE METAL TRIMS"—Catalog No. 39 is a beautiful book of 24 pages illustrating late ideas in edge and joint mouldings for wall and floor coverings. Some interesting installation details are included, and a price list with trade discounts is a feature.—**THE B. & T. FLOOR CO.**, Columbus, Ohio.

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